

CAREERS FOR OUR SONS.

**A Practical Handbook to the Professions and
Commercial Life,**

COMPILED FROM THE MOST RECENT OFFICIAL
REGULATIONS, AND DEALING WITH

**The Church, Army and Navy, Mercantile Marine,
Law, Medicine, Teaching, Civil Service, Engineering,
Journalism, Farming, City, and Colonial Openings.**

BY

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WITH A PREFACE BY

The Rt. & Hon. LORD MORPETH, M.P.

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and regulations as they occur.

PREFACE.

Mr. Williams addresses himself to one of the most practical questions that a parent has to solve. It is also one of very great difficulty. There are the inclinations of the parent, still more the inclination of the boy to be considered. Neither of these inclinations may be founded on any real aptitude on the part of the boy, for too often inclination is merely fancy and not the possession of qualities necessary for success. Harder still is the case where the boy has no inclination, for perhaps a majority accept what turns up rather than find an opening for themselves. When inclination has been discovered, the parent is still confronted with the problem, whether his means enable him to put his son into the business or profession of his choice. There are, besides, the special requirements of age, the length of training, and the suitable place of education to be considered, and in most cases the perils and difficulties of competitive examination to be surmounted.

There is no field of social life of equal importance left so to hazard without adequate direction or, perhaps we should say, no labyrinth so tortuous for which no clue is provided. In this labyrinth Mr. Williams, from long experience, moves with ease and without bewilderment. His advice therefore is eminently opportune; as the boy hails the assistance of the crib in the intricacies of the obscure passages of the classics, so the parent will welcome this crib to the obscurities that mark the avenues leading through examinations to the various professions.

It is a work for which parents will tender heartfelt thanks if they have the fortune to come across it. The School-master's duty is not only to instruct the young during the hours of school, and to watch him during his school career, but as a result of his observation to help him to the all important decision of discovery in what direction his talents lie and how he may best use them in the larger field of life that lies beyond the school. The successful School-master is not only a scholar and a teacher, but is also a man of the world with the knowledge necessary to point out the further paths beyond the school-room and the playing field. The honours list of a school gained in examinations is indeed important, but more important still is the wider honour list of former pupils established successfully and honourably in the businesses of life, grateful to their old School and their former Masters for having started them on the wider road of life.

MORPETH.

INTRODUCTORY.

THE First Edition of this book, which was issued in 1904 with a Prefatory Letter by Lord Selby, then Speaker of the House of Commons, met with considerable public favour, and a Second Edition is now required. In its revised and much enlarged form I trust the book will better deserve the support it received on its first appearance. I would desire to express my obligations to those Headmasters who have favoured me with many useful hints and suggestions; and I have, also, derived help from some of the notices which appeared in the Public Press. To Viscount Morpeth, M.P., who has kindly written the Preface to this Edition, I feel greatly indebted, for, while being a man of affairs, he has, also, had wide experience of education both as a present member of the Cumberland Education Committee and as a member, formerly, of the London School Board.

For much valuable guidance and counsel I offer my grateful thanks to Major S. Butterworth, Retired, late Royal Army Medical Corps, Carlisle, Captain F. J. Cheverton, Royal Artillery, Adjutant 1st Cumberland R. G. A. Volunteers, and Dr. Tudsbery, Secretary of the Institution of Civil Engineers, while it is my pleasure to acknowledge the help I have received from the vigorous and skilful co-operation of A. E. Thomas, Esq., M.A., Trinity College, Oxford, W. T. McIntire, Esq., B.A., Lond., Principal of Tullie House, Carlisle, and my colleagues T. H. Walrond, Esq., M.A., Balliol College, Oxford, and F. T. Allen, Esq., B.Sc., Dunelm.

G.H.W.

The Grammar School, Carlisle,
March, 1908.

PRESS NOTICES OF FIRST EDITION.

- "Mr. Williams is well fitted for the task he undertakes, and the information and advice which he gives is sound, concise, and practical."—*The Times*.
- "Parents will find the book of real assistance in solving one of the most perplexing problems of life."—*Yorkshire Post*.
- "The question 'What to do with our boys' is full of perplexity, but no Parent need feel much anxiety with Mr. Williams' book in his hands."—*Record*.
- "It is likely to prove of very real help to Parents."—*Liverpool Courier*.
- "A very suggestive and serviceable book."—*Glasgow Herald*.
- "Well studied in the official sources of information."—*Scotsman*.
- "Cannot fail to prove useful."—*Western Mail*.
- "Just what parents require."—*Church Family Newspaper*.
- "In this work we find thoroughness. Much care, it is evident, has been taken in its compilation. Parents and guardians and youths interested in seeking for the best opening in life can consult this book with confidence and with profit."—*Birmingham Daily Post*.
- "We regard it as a most useful compilation, and one that ought to be extensively known and used by parents and guardians."—*Liverpool Mercury*.
- "The anxious parent will turn to Mr. Williams' book with thankfulness in his heart."—*South Wales Daily News*.
- "Very practical, indeed, is this handbook to the professions and commercial life."—*Western Morning News*.
- "Mr. Williams describes with much useful detail eighteen careers, . . . and all, as far as we are able to judge, both accurately and clearly."—*The Spectator*.
- "Any father who masters a book like this, and who acts for his son in the light of the knowledge so acquired, will eliminate from the boy's future nine-tenths of the risks of failure."—*Daily News*.

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Careers for our Sons.

I.—THE CHURCH.

The Ministry of the Church is a sacred commission, but, because it has a practical side, it may legitimately be considered as a profession. The information offered is intended to apply to the Established Church, but the Free Churches are every year making larger demands upon the learning of their ministers, and the information relating to the ancient Universities, the modern Universities, and the Provincial Colleges is equally applicable to the Free Churches. We may well believe that it will be to the advantage of the cause which all the Churches serve, when their ministers are still more largely educated side by side in the common atmosphere of cultured learning, wherein asperities are softened and men are better fitted for the responsibilities that lie before them.

Qualifications. A candidate for Holy Orders ought to enjoy fairly good health. It is true that in some country parishes, which do not cover a wide area, a man who does not possess a robust constitution may yet do good and useful work; it is equally true that in many town parishes the demands upon a

man's energy are so severe that they give scope for the most vigorous vitality. In every sphere, good intelligence, based upon a sound education, is imperative, and this intelligence should be linked with tact and sympathy and common sense. Further, candidates too often forget the importance of subordinate qualifications, such as business method, punctuality, and the proper use of the voice, to enable them to read clearly and speak distinctly. Above all, the candidate for Holy Orders should be conscious of the deeper issues of human life. A young man need not shrink from seeking Holy Orders because he has not felt some overwhelming and tremendous "call"; such "calls" do, no doubt, occur in exceptional cases, but a sober, clean-living, prayerful young Churchman can move forward with a good heart to this great responsibility, knowing that in the solemn experience of his own life and of his work as a clergyman his convictions will inevitably be deepened and illumined.

Training. I.—The Ideal Course—A youth should remain at a good school until he is about 19, and should then proceed to either Oxford or Cambridge. This course is the more expensive, but, if means will admit, it should be chosen in preference to any other. The advantages of Oxford or Cambridge are so decisive that a training there should be sought, even if it should involve the most severe economy, and often the discipline of such economy is the noblest preparation for after life, as was instanced in the case of the late Dr. Temple, Archbishop of Canterbury.

Expenses at Oxford and Cambridge.—A man cannot take his B.A. degree at either University until he has kept residence for three years (he usually resides each year for three terms of eight weeks). Men who seek honours generally remain four years.

The expenses at the two Universities are practically the same, and at either a man may choose to join a College, or become a Non-Collegiate (or unattached) Student.

As a Member of a College.—The expenses of a careful man will range, according to his own tastes and the College which he joins, from £140 to £180 per annum.* Cases have been known where men, with rigid economy, have managed on £120 per annum. These amounts cover travelling, clothes, and books, and all needful College subscriptions, but assume that the student has no expenses to meet during the vacations.

Parents, who can afford it, will act wisely in allowing their sons to join a College, for the social and other advantages of membership of a time-honoured foundation are important.

Valuable Scholarships and Exhibitions are open to youths of ability, whereby the expenses

* In giving these figures, which are based on a large number of actual cases personally known to us, we have in mind the man who desires to be strictly careful in his expenditure; Parents may regard them as reliable. For men in easy circumstances £250 per annum may be taken as an average, while extravagant men spend much more, but these are not the class that we are considering. One of the most economical of the moderate-sized Colleges at Oxford is Jesus College, which has of recent years been doing brilliantly in the Schools.

of residence are substantially reduced, and, in some cases, entirely covered.

As a Non-Collegiate Student.—Expenses by this course can be considerably reduced; they will range, if care is exercised, from £70 to £90 per annum, i.e., about one-half the expenses of College under similar conditions of expenditure. For further official information application should be made to the Rev. the Censor, Students' Delegacy, High Street, Oxford, or to the Censor, Fitzwilliam Hall, Cambridge.

Admission is obtained by matriculation, by passing or by obtaining exemption from the "Previous" at Cambridge, or "Responsions" at Oxford; exemption from both the "Previous" and "Responsions" can be secured by a Higher Certificate of the Oxford and Cambridge Board, through the Oxford Senior Local Examination, the Cambridge Senior Local Examination, the London and Northern Universities' Matriculation, and the Examination for the Scotch Leaving Certificate.

For full information as to the different Colleges, the subjects of study for a pass or honours degree, &c., the official handbooks should be consulted, viz.:—The Student's Handbook to the University and Colleges of Oxford, 2s. 6d. net, Clarendon Press Repository, 116 High Street, Oxford.

The Student's Handbook to the University and Colleges of Cambridge, 3s. net, University Press, Cambridge.

No candidate for Holy Orders can be ordained a Deacon until he is 23, and many men with great advantage spend a year after taking their degree at a Theological Hall, e.g., Wycliffe Hall, Oxford; Ridley Hall and the Clergy Training School, Cambridge; the Clergy School, Leeds; St. Aidan's College, Birkenhead; St. David's College, Lampeter; Ripon College, Ripon; Ely Theological College, &c., where they obtain special training, gain an insight into pastoral work, and often prepare for the "Universities' Preliminary Examination of Candidates for Orders," which is accepted by most Bishops in lieu of their own examinations. The cost of a year's residence at a Theological College may be calculated at £90 as a fair average. The post-graduate courses at Ripon College, Ripon; St. Aidan's, Birkenhead; and St. David's, Lampeter, are strongly recommended; for further particulars consult Appendix.

Preliminaries to Admission to Holy Orders.—

After obtaining his degree and attaining the age of 23, a candidate is now ready to offer himself to the Bishop for acceptance. The Bishop will appoint a day for an interview either with himself or one of his chaplains. If the candidate is accepted, he will then be required, if he has not already passed the "Oxford and Cambridge Preliminary Examination of Candidates for Orders," to pass

the Bishop's examination for Deacon's Orders. A month at least before Ordination he must furnish the Bishop's Secretary with the following papers:—

- (1) A Certificate of Baptism.
- (2) A Certificate that he has attended the Divinity Lectures of the Regius Professor at Oxford or Cambridge; or the Divinity Testimonium from Dublin, or the Licence in Theology from Durham; or the "Preliminary Examination Certificate;" or a Certificate from a Theological College.
- (3) Testimonials from his College.
- (4) The "Si quis," a document challenging objection to his fitness for Holy Orders, which has to be read in Church at least a month before his Ordination, and has to be signed by the officiating Minister and one Churchwarden.
- (5) A testimonial signed by three beneficed Clergy to whom the candidate is personally known, and of whom the Incumbent, who nominates him to a Curacy, must not be one.
- (6) A nomination to a Curacy.

The subjects of examination are generally on the lines of the "Oxford and Cambridge Preliminary Examination of Candidates for Holy Orders," and,

to take an instance, are as follows in the Diocese of Carlisle:—

EXAMINATION OF CANDIDATES FOR DEACON'S ORDERS

- 1 A General Paper on the contents of the Bible
- 2 Old Testament, selected portions
 - * (a) A Book of the Psalms
 - * (b) Some other book of the Old Testament
- 3 New Testament (in Greek)
 - * (a) One of the Gospels
 - * (b) One of the Epistles or other Book of the New Testament

The papers on 2 and 3 will contain passages for translation and questions on the subject matter criticism grammar and exegesis of the books together with questions on "Introduction"

4 The Creeds and the XXXIX Articles history, text, and subject matter Questions will also be set on Apologetics

5 The Prayer Book history and contents

6 Ecclesiastical History

(a) The History of the Christian Church to the Council of Constantinople (inclusive)

(b) The history of the English Church from the earliest times to the accession of Queen Anne

*7 A selected work or works of a Latin Ecclesiastical writer

8 A Voluntary paper in Elementary Hebrew

9 A *viva voce* examination in Greek Testament

Candidates who have obtained at least a second class in the Oxford and Cambridge Theological Preliminary Examination will only be required to take Nos 1 4 5 and 9 of the above

During the Ember week all Candidates will be required to write a Sermon and may be required to do other papers of a Missionary or Devotional type, not necessitating special preparation. Every candidate will be expected to read aloud before the Bishop. Great importance will be attached to the quality of a Candidate's reading.

* These subjects will be the same as those set in the Oxford and Cambridge Theological Preliminary Examination for Candidates for Holy Orders.

The subjects of the Universities' Preliminary Examinations are as follows:—

UNIVERSITIES' PRELIMINARY EXAMINATION OF CANDIDATES
FOR HOLY ORDERS.

"The Examinations are always held on the Tuesday in the second week before or after Easter which is nearest to April 3rd, and on the Tuesday nearest to October 8th." A fee of twenty-five shillings is charged to every Candidate who enters the Examination.

The Examinations in 1908 will be in the following Subjects:—

1. A general paper on the contents of the Bible.
2. Old Testament; *(a) Psalms, xlii-1 and lxxiii-lxxxix inclusive. [Candidates will be expected to be acquainted with the Bible and Prayer-Book Psalters.] (b) History of the Northern Kingdom, as contained in 1 Kings xii to 2 Kings xvii, with Amos.

The paper in these books will contain questions on their subject-matter, criticism, and exegesis, together with questions on "Introduction."

3. New Testament (in Greek): *(a) The Gospel according to St. Mark; (b) The Epistle to the Romans. The paper in these books will contain passages for translation and questions on the subject matter, criticism, and exegesis of the books, together with questions on "Introduction." Candidates will also be expected to show a general knowledge of the Lord's life and teaching as contained in the Four Gospels. Passages from the English Version of the selected books will be given to be rendered into the original Greek.

4. The Creeds and the XXXIX Articles: history, text, and subject-matter. Questions will also be set on Apologetics.

* These subjects will also be set in 1909.

5. The Prayer-Book : history and contents.
6. Ecclesiastical History : (a) The History of the Christian Church to the Council of Constantinople (inclusive) ; (b) The History of the English Church from the earliest times to the accession of Queen Anne.
7. Cyprian, *De Oratione Dominica*. A passage will also be set for translation into English from some ecclesiastical Latin author not previously specified.
8. A voluntary paper on Elementary Hebrew with passages for translation from 1 Kings xvii, xviii, xix. 2 Kings iv, v.

N.B.—An opportunity will be given in this paper for showing a knowledge of the Hebrew of all the selected books of the Old Testament. An asterisk may be obtained by those who do creditably in the elementary part of this paper only.

Candidates must satisfy the Examiners in each of the first seven subjects.

A fee of 25s. will be charged to every Candidate who enters for the Examination.

Gentlemen who wish to offer themselves as Candidates are requested to send their names, with certificates of moral character and particulars of their degrees, or written forms of nomination from Bishops in cases where such nominations are required, to Rev. Dr. King, Gayton Rectory, Blisworth, R.S.O., before 1st March for the Easter Examination, and before 1st September for the October Examination. Candidates should give a permanent address.

Papers given in previous Examinations, with the Regulations, &c., may be had of DRIGHTON, BELL, & Co., Cambridge and London, and of PARKER & Co., Oxford, price one shilling each set, or by post on receipt of 13 stamps.

After being in Deacon's Orders for a year, permission may be asked to attend the Priest's Examination. The subjects differ in the various dioceses, and information should be obtained from the Bishop's Chaplain.

In the Diocese of Carlisle, for example, the examination for Priest's Orders consists of two parts held respectively at Advent and Trinity, in the Ember week:—

Advent Portion.

- 1 Isaiah xl—lxvi, with G. A. Smith's "Book of Isaiah" (Hodder and Stoughton), Vol II
- 2 The Epistle to the Hebrews
- 3 Butler's Analogy, Part I
- 4 (a) The Doctrine of Baptism and Confirmation
(b) Ecclesiastical History from 381 to 451

Trinity Portion.

- 1 "The Doctrine of the Prophets" (Kirkpatrick)
- 2 Butler's Analogy, Part II
- 3 Doctrine of the Holy Communion and of Ordination.
- 4 (a) History of the Church of England from 1702 to the accession of Edward VII
(b) Hooker, Book v

In the Ember Week preceding their Ordination, Candidate Priests will be required to write a Sermon, and will also be set a paper bearing upon Pastoral Care, Foreign Missions, and the Study of Social Questions.

Candidates for Priests' Orders are required to send two Sermons preached during their diaconate, to the Bishop, one month before the commencement of the second portion of their Examination. The Bishop will himself examine every Priest in the delivery of a Sermon.

II.—Courses alternative to Oxford or Cambridge.—If a man cannot afford the expenses involved in a career at Oxford or Cambridge, then a resident degree should be sought at the University of Durham,

where many of the opportunities, religious, educational, social, athletic, which attract men to the older Universities, are offered at moderate cost (£70 to £100): the University of the North in its two divisions—the one at Durham, and the other at Newcastle—deserves to be widely known; or at one of the Scotch Universities; or at Trinity College, Dublin (which also grants degrees without residence); or at St. Aidan's College, Birkenhead, which is now affiliated to the University at Liverpool; or at St. David's College, Lampeter.

The degrees of the University of London can be obtained without residence, but their value is much increased when they are obtained through membership of University of London, University College, or King's College, London. Degrees can also be obtained at the Universities of Liverpool, Manchester, Leeds, Sheffield, and the University Colleges of Cardiff, Aberystwyth, and Bangor (the constituent Colleges of the University of Wales). The expenses of these Colleges, when a man resides there, may be reckoned as ranging from £70 to £80 per annum, and a three years' course is generally necessary for a degree. Scholarships and Exhibitions ranging from £25 to £60 are offered for open competition.

A course that is still less expensive is to forego the advantages of a degree and to proceed for training for two years to a Theological College. This course is not advisable save in exceptional cases, *e.g.*, when a man's early education has been neglected, or when his means are very limited. Nevertheless,

a man of deep earnestness, determination, and good natural ability, may turn a two years' course at a Theological College to excellent purpose. A man's annual expenses may be reckoned at £70 on an average. Two of the best of these Theological Colleges at the present time, are St. David's College, Lampeter, and St. Aidan's College, Birkenhead, and at both Colleges the abler men have the opportunity, if they find they can afford the time, of securing a degree.

Prospects. The stipend of a Curate in Deacon's Orders will be from £120 to £150, and, on proceeding to Priest's Orders, he may expect from £140 to £160, or even, in important parishes, £200 per annum. There is a great demand for Curates, and the supply is inadequate. The financial conditions of a young Curate are quite satisfactory so long as he remains unmarried, but he must bear in mind that Incumbents do not usually seek Curates who are over 40.

An able and earnest Curate may hope in five to ten years to obtain an Incumbency. Incumbencies, however, at present are not in many cases very desirable. Of the 14,242 parishes, the income of the Incumbent in 6,195 falls below £200 per annum, and in 10,772 below £300, in 1,491 it is less than £100, and in but few does it reach £400 and upwards. The average net value of a benefice in Wales varies from £171 in the diocese of St. David's to £228 in St. Asaph. In England the lowest average values are £196 in Hereford and £203 in Oxford. In Sodor and Man it is as low as £164.

An effort is being made in many dioceses to bring the value of the poorer Incumbencies up to £200 per annum, and the income of an Incumbent is often gracefully augmented by the Easter offerings of his parishioners.

The Ecclesiastical Commissioners made an announcement in January, 1908, which, the Archbishop of Canterbury says, will have the effect of augmenting the incomes of 1,000 benefices from the 1st of May, 1908. Where a benefice, which is in public patronage, has been in existence three years and the population is 1,000 or more, the stipend will be raised unconditionally to £200 a year. Some others are also to be improved. The Primate expresses the opinion that every incumbent ought to have £300 per annum secured to him, and says this will now be a possible achievement.

There are, further, the "dignities" in the Church, whether as Bishop, Dean, Archdeacon, Chancellor, or Residentiary Canon, which are positions of great influence: many of them still carry with them good stipends, but it must be borne in mind that they have to meet many exacting claims. Mere influence—whether political or social—is still, unfortunately, an occasional factor in the appointment to "dignities" in the Church of England, but merit and ability are every year receiving clearer recognition, and the appointing authority, whether it be Prime Minister or Bishop, must, under pressure of public opinion, give due consideration to a man's fitness for preferment.

Select list of Colleges and Schools, of which fuller information is found in the Appendices :—

University College and Hatfield Hall, Durham.

King's College, London.

St. Aidan's College, Birkenhead.

St. David's College, Lampeter.

Ripon College, Ripon.

Durham School.

Sedbergh School.

Eastbourne College.

Bromsgrove School.

Giggleswick School.

Trent College.

King's School, Canterbury.

King's School, Rochester.

St. Lawrence College,

Ramsgate.

Christ College, Brecon.

Plymouth College.

Monmouth School.

Dover College.

Brighton College.

Dean Close School,

Cheltenham.

Grantham School.

Kendal Grammar School.

Windermere Grammar

School.

Carlisle School.

II.—THE ARMY AND NAVY.

i.—The Army.

To a youth of sound physique, good intelligence, and adventurous spirit the Army offers a great career. The catastrophies of the South African campaign and the Report of the recent "War Commission" brought home to the nation the importance of having officers who are thoroughly in earnest about their profession, officers who have brains as well as pluck, who are enthusiastic and not above taking trouble. Another new Army "Scheme" has come, and it makes an urgent appeal to the patriotism of the country.

A very interesting Conference was held on the 7th June, 1907, between the Army Committee on Provision of Officers and Headmasters and Officers commanding Cadet Corps. The Secretary of State for War was present and addressed the Conference as follows:—"Up till now the Regular military organisation of this country has been separated by rather too great a gap from the nation itself. We have felt that as military standards have advanced, and as, above all, the function of the Officer has become more and more important, it was necessary for us to seek to bring the resources of the great educational establishments to bear upon this problem, as they have already been brought to bear upon a great many other problems. This is a day when science is becoming more and more requisite—the science that can only come through the mind that is trained. . . . There is in the two categories of the Regular Army and the Territorial Force a total deficiency at present of

between 8,000 and 9,000 Officers—a deficiency of over 4,000 in the Regular Army and of nearly 4,000 in the second line.” Speaking on another occasion at Stirling, in December, 1907, Mr. Haldane stated that one of the greatest problems we had to face to-day was the shortage of Officers.

The Army Council are anxious to encourage the supply of Officers from the Cadet Corps of the Public Schools, and Sir Edward Wood, Chairman of the War Office Committee on the Provision of Officers, in a circular letter dated 30th October, 1907, states that the Army Council have approved of the principle that a certain number of marks may be allotted at the competitive examination for entrance into the Royal Military Academy, Woolwich, and the Royal Military College, Sandhurst, to Candidates who are in possession of Certificate “A,” the nature and conditions of which are laid down in the recently issued Regulations for the Officers’ Training Corps.

Great possibilities, then, lie before the well-trained officer who is “keen”; he will do well to lay to heart the words of quaint George Herbert:—

“ If souldier,
Chase brave employments with a naked sword
Throughout the world. Fool not ; for all may have,
If they dare try, a glorious life or grave.”

If the chances of active service find him equal to the occasion, he may hope in due time to attain to high rank; further, military men, more especially those in the Indian Army or in the Royal Engineers, have opportunities, if they feel disposed to accept them, of civil employment, often in a sphere in which they may still be of service to the Empire; and then,

finally, if a man is overtaken by the age limit, he can look forward to a retiring pension, which, if not large, is at least comfortable.

The prospects are good, but, on the other hand, a parent must be ready to face some considerable outlay while his son is being prepared for a Commission, and, also, must be able to supplement his pay for three or four years after he has obtained a Commission.

The Administration of the Army is vested in *The Army Council*, composed of the Secretary of State for War, four Military Members, the Finance Member, and the Civil Member. It holds the same position with respect to the Army as the Admiralty Board with respect to the Navy. At the head of it stands the Secretary of State for War, who is directly responsible to Parliament, and who could, in the last resort, over-rule all his colleagues of the Council.

The General Staff, created in September, 1906, is the brain of the Army. It is composed chiefly of officers who hold a Staff College Certificate, and whose names have been placed on a list of specially qualified officers called the General Staff List. The General Staff List has for its chief functions to advise on the strategical distribution of the army, to supervise the education of officers and the training and preparation of the Army for war, to study Military schemes, to collect and collate Military intelligence and to direct the general policy in Army matters. Approved service on the General Staff is recognised by accelerated promotion.

A youth should be placed at 13 to 14 in a Public School, and receive a sound general education, paying

special attention during his last two years at School to Mathematics and Modern Languages. From those Schools, which have a strong modern side, he may obtain his admission direct into Woolwich or Sandhurst, and wherever possible, this is the wiser course; if the training at School is not sufficiently specialised to secure admission direct into the Military Colleges, he should be sent to a good Army Coach (consult Appendix for particulars about Establishments that can be recommended). We have treated later on of the advantages to be secured by a youth who proceeds from School to the University.

There are four ways of obtaining a Commission:—

1. Through the Military Colleges of Woolwich and Sandhurst: Woolwich for the Royal Artillery and Royal Engineers, Sandhurst for the Cavalry and Infantry, and Army Service Corps.
2. Through the Militia and Yeomanry: for all branches of the Service.
3. Through the Universities.
4. By promotion from the ranks.

Candidates through Sandhurst and Woolwich, as distinct from Militia, Yeomanry, and University Candidates, will be subjected to a two-fold test:—

(A.) The Qualifying Examination.

(B.) The Competitive Examination.

No Candidate can proceed to **B** until he has passed **A**.

A.—The Qualifying Examination. This can be taken in three ways:—

1. Through the Army Qualifying Examination.
2. By a “Leaving” Certificate obtained at School.
3. Through a War Office “Exempting” Certificate.

(1) The Army Qualifying Examination:—

Applications to attend should be made to the Secretary, Army Qualifying Board, University of London, S. Kensington. The Examination is held twice a year, viz., on the 1st Tuesday in March and the 3rd Tuesday in September: applications must be received by the Secretary not later than February 1st for the March Examination, and not later than August 1st for the September Examination. Candidates must have completed their seventeenth year by March 1st, or September 1st, as the case may be, before they can present themselves for examination. The fee is £2; in Dublin, £3.

N.B.—Candidates for Woolwich must qualify at this Examination in the subjects of Mathematics I of the Competitive Examination.

N.B.—A Candidate who has a “Leaving” Certificate (see below) in the ordinary subjects may present himself at the Army Qualifying Examination to qualify in Mathematics I only.

The Subjects covered by the Qualifying Certificate (the detailed syllabus is given further on) are divided into classes, as follows:—

CLASS I.

(Candidates must qualify in all.)

1. English.
2. English History and Geography.
3. Mathematics (Elementary).

CLASS II.

(Candidates must qualify in any two.)

4. Science.
5. French or German.
6. Latin or Greek.

SYLLABUS OF SUBJECTS FOR THE QUALIFYING EXAMINATION.

1. ENGLISH.

(1) Dictation. (2) Short "pass" essays on a limited number of questions (three to be done of a larger number set). (3) One short précis. (4) A paper to test general intelligence and power of expression.

2. ENGLISH HISTORY AND GEOGRAPHY.

History.—English History in three periods: 1066 to 1485, 1485 to 1688, 1688 to 1832, and the paper set will be divided into three corresponding parts. Candidates will be allowed to choose questions from two consecutive parts only.

Geography.—(1) General. Main physical features of the world. Elementary principles of map construction. Elementary political geography. (2) British Empire; rather more in detail.

3. ELEMENTARY MATHEMATICS.

Arithmetic.—The ordinary rules, with applications more especially to the mensuration of plane figures and solids. The metric system and the use of decimals in approximative calculation, with contracted methods, will be specially insisted upon. Neither the extraction of the cube root, nor the use and theory of recurring decimals is required.

[Neatness and accuracy of working are expected; and the methods of solution employed must be clearly indicated. There will be no objection to the intelligent use of algebraic formulæ and symbols.]

Geometry.—The elements of geometrical drawing and practical geometry. The substance of Euclid, Books I., II., III., and a working knowledge of as much of the properties of similar figures as is necessary for plan-making, map-drawing, and simple problems in mensuration.

Algebra.—To simple quadratic equations; the elementary use of graphs, particularly in connection with linear and quadratic functions.

[The papers will be set to test knowledge of fundamental principles and readiness in application to simple practical problems. The solutions of equations must be worked out to a few significant figures; and candidates must be accustomed to test the accuracy of solutions by substitution. Skill in elaborate analysis, such as the simplification of complicated fractions, will not be looked for.]

Practical Work.—Measurement of length—verniers, calipers, micrometer, screw-gauge, spherometer. Measurement of angles—use of protractor, &c. Measurement of areas—by dimensions, by squared paper, by weighing; area of cross-sections of a tube, calibration of a tube. Measurement of volume—by dimensions, by graduated jar or burette. Measurement of weight—use of balance. Principles of Archimedes—volume by weighing. Specific gravity.

[The examination will deal with the first three subjects, with the possibility of questions for written answers on the other four.]

4. EXPERIMENTAL SCIENCE.

PHYSICS.

Mensuration.—Properties of matter with regard to mass and volume. Measurement of lines, areas, volumes, mass, time.

Light.—Rectilinear propagation. Shadows. Velocity of light. Photometry. Laws of reflection—plane, concave, and convex mirrors. Laws of refraction. Prism. Convex lens. Explanation of simple phenomena. •

Magnetism.—Magnets and their properties. Permanent and induced magnetism. Methods of magnetisation. Molecular theory. Magnetic fields and lines of force. Terrestrial magnetism.

Statical electricity. Electrification. Induction. Gold leaf electroscope. Electrophorus. Elementary notions of potential and distribution of charge.

Current electricity.—Construction of batteries. Magnetic field due to current. Simple galvanometers. Ohm's law with simple applications. Chemical action of the current. Heating effects of currents. Transformations of energy.

Practical Work.—Verification of points on thermometers. Melting and boiling points. Simple photometry. Focal lengths of mirrors and of convex lenses. Experimental verification of laws of reflection. Mapping of lines of force in magnetic field. Simple experimental applications of Ohm's law. Equipotential lines on a conducting sheet.

CHEMISTRY.

Classification of matter.—Gases, liquids, solids.

Constitution of matter.—Elements, compounds, mixtures.

Study of water.—(a) Solution of gases, of liquids, of solids in water. Natural waters. (b) Evaporation, distillation, solidification, of water. (c) Qualitative and quantitative chemical constitution of water.

Study of the atmosphere—(a) Pressure. (b) Constitution.

Chemical action.—Combustion, flame. Plant and animal life. Conservation of matter and weight.

Oxides.—Acidic, basic, and neutral.

Acids and Salts.—Formation of acids from acidic oxides. Neutralisation of acids by bases.

Study of the non-metallic elements, hydrogen, oxygen, nitrogen, chlorine, carbon, sulphur, with their more simple or common compounds.

Practical Work.—Soluble and insoluble substances.—Quantitative estimation of solid in solution. Quantitative examination of mixture containing a soluble and an insoluble substance.

Action of heat in air on common elements.—Quantitative examination of gain in weight. Examination of the properties of the bodies formed.

Neutralisation of bases by acids and preparation of very simple salts.

Method of crystallisation—Determination of water of crystallisation in a salt.

Preparation of hydrogen oxygen, and nitrogen by the simplest and most common methods.



5. FRENCH

(1) and (2) Simple unseen translation from and into French. Pronunciation to be tested orally.

Or,

GERMAN.

(1) and (2) As for French. Pronunciation to be tested orally.

6. LATIN.

(1) Two pieces of Latin prose to translate into English.

(2) A simple piece of Latin verse to translate into English.

(3) Easy prose to translate into Latin.

Or,

GREEK.

As for Latin.

(2) *We now come to the "Leaving" Certificate.*—Exemption from the Army Qualifying Examination is granted to Candidates who hold a "Leaving" Certificate (which must include the subjects covered by the Syllabus of the Qualifying Examination given above) obtained through certain recognised examining bodies, viz.:—

For Schools in England and Ireland.

The Oxford and Cambridge Schools Examination Board.

The Oxford Local Examination Delegacy.

The Cambridge Local Syndicate.

The University of London.

The University of Birmingham.

For Schools in Scotland.

The Scotch Education Department.

For Schools in Wales.

The Central Welsh Board.

It is for the "Leaving Certificate" that the Public Schools usually work, and the advantages are obvious. A lad's studies need not be dissociated from those of his fellows, and he can take the exempting Examination, as it were, "in his stride." The "Leaving" Certificate can be obtained by a boy in his seventeenth year (but he must remain at School until his seventeenth year, at least, is completed), who has attended three years' continuous teaching in a School approved by the Army Council (consult the Appendix for details of some of the best of these Schools).

(3) *Thirdly, there is the War Office "Exempting Certificate."*—This is granted by the War Office to a Candidate who has qualified for admission to the Royal Military Academy or the Royal Military College at a Competitive Examination held under the Regulations in force up to and including June, 1905, or who has obtained a similar standard in one of the following Examinations, held by the Civil Service Commissioners, up to and including, June, 1905, viz. :—

The Examination of Candidates for the India Forest Service.

The Examination of Candidates for the India Police Service.

The Examination of Candidates for the Junior Appointments in the Supply and Accounting Departments of the Admiralty or the

Examination of Candidates for the Junior Appointments in the Royal Ordnance Factories of the War Office.

When the Qualifying Examination is Past.—

When a Candidate is clear of the Qualifying Examination in one of the three ways indicated, *i.e.*, by passing the Army Qualifying Examination, or by securing a "Leaving Certificate" at School, or by obtaining an "Exempting Certificate" from the War Office, he can turn his thoughts to the Competitive Examination, by which entrance is gained into Woolwich and Sandhurst.

To avoid possible rejection in the future it would be well for the Candidate now to undergo the Preliminary Medical Examination, which is optional. He may do this within two years of competing. If found unfit, he is not bound to abide by the decision, but he continues his studies at his own risk.

It is wise, therefore, at the outset, to consider the question of physical fitness, for the standard required is fairly high, and any constitutional weakness or defect will disqualify. A candidate, therefore, before beginning his course of study for the Competitive test, should be thoroughly examined by the Preliminary Medical Board. Fee £2 2s. 0d. If successful in the Competitive Examination he must again undergo medical examination by the Final Medical Board, and is liable to disqualification, for no pledge of acceptance is given by the Preliminary Medical

Board. The Table of Physical Equivalents is as follows, and the standard stated is the minimum:—

Age last birthday.	Height without shoes.	Chest.	
		Girth when fully expanded.	Range of expansion.
	Inches.	Inches.	Inches.
16	60 and under 62	33	2
17	62 and under 65	34	2
18	62 and under 65	34½	2
19	62½ and under 65	35	2
20	62½ and under 65	35	2
21 and upwards.	62½ and under 65	35	2

It is quite possible to bring boys up to these standards by proper training, if they are not much below them. During the School period the teeth ought to receive constant attention, and any decayed ones immediately stopped. Loss or decay of ten teeth is a disqualification, but well-stopped teeth are considered sound. The feet and toes must not be injured by tight boots. Eyesight and hearing must be good, and there must be no impediment of speech. A candidate must not suffer from a severe degree of varicose veins, but one who has been successfully operated on will be accepted.

B.—The Competitive Examination. Candidates will now proceed to the Competitive test for the Royal Military Academy, Woolwich, or the Royal Military College, Sandhurst.

Competitive examinations for Woolwich and Sandhurst will be held half-yearly, and will commence in June and November; due notice will be given of the dates of the examinations, and every candidate for those examinations must obtain the necessary printed form of application, for admission to the examination, which will be furnished on application, by letter, addressed to the Secretary, Civil Service Commission, Burlington Gardens, London, W.

The form must be filled up in the candidate's own handwriting, and should be received by the Secretary of the Civil Service Commission not later than the 1st April or the 1st September respectively.

No form of application received after the 15th May or 15th October will be accepted under any circumstances.

No question as to the delay or loss in the post of any such application form can be entertained. Candidates who delay their applications until the last days will do so at their own risk.

Any candidate who has filled up and returned the printed application form, but has not received an acknowledgment of it within four complete days, should at once write to the Secretary, Civil Service Commission, Burlington Gardens, London, W. Failure to comply with this provision will be liable to deprive the candidate of any claim to consideration.

A candidate (other than a candidate for a Cavalry Cadetship, a Guards Cadetship, or for the West India Regiment) may, provided his "leaving" or

“qualifying” certificate includes subject (3A)—Mathematics I.—, enter for both the Royal Military College and Royal Military Academy at the same competitive examination, but, if he does so, he must take up the subjects as set forth for the Royal Military Academy.

A candidate who so enters will count for the Royal Military College his marks in English, French (or German), and the best two of his three remaining subjects.

Each candidate must state, before examination, on a form supplied by the Civil Service Commissioners, whether he intends to compete—

- (a) For the Royal Military Academy only.
- (b) For the Royal Military College only.
- (c) For both, the Royal Military Academy preferred.
- (d) For both, the Royal Military College preferred.
- (e) For a Cavalry Cadetship only, Royal Military College.
- (f) For a Guards Cadetship only, Royal Military College.

With regard to (c) and (d), a candidate may say that if he is not within the first (so many) successful competitors for the Royal Military Academy (or Royal Military College, as the case may be), he will elect for the Royal Military College (or Royal Military Academy).

Cases may, however, arise in which it would not be possible to give effect to such conditional preference.

In no case will a candidate be permitted to make any change in his selection after the examination has begun.

A certain number of Cavalry Cadetships will be offered at each competitive examination. Candidates for these cadetships will compete among themselves, and will be classified on a separate list.

Successful candidates on this list will enter the Royal Military College as Cavalry Cadets, and on passing out will be eligible for Commissions in the British Cavalry only.

Candidates will be required to satisfy the Civil Service Commissioners that they are within the prescribed limits of age, and are eligible in respect of character.

[Every candidate should be prepared to furnish the Civil Service Commissioners, as soon as called upon to do so (i.e., immediately after he has sent in his Application Form), with an abstract from the register of his birth; or, if this cannot be obtained, a certificate of his baptism or other documentary evidence, accompanied by a statutory declaration made by one of his parents or guardians before a magistrate, giving the exact date of birth.]

If the candidate holds a Commission in the Militia or Imperial Yeomanry he will be called upon to furnish the Civil Service Commissioners with a recommendation from the Commanding Officer of the unit.

Each candidate must, on the first day of the examination, hand in to the Superintendent of the examination room either:—

- (a) A "Leaving" Certificate on a form approved by the Army Council; or,
- (b) A "Qualifying" Certificate, issued under the authority of the Army Council; or,
- (c) A War Office "Exempting" Certificate (see above).

A candidate who fails to furnish one of the above-mentioned certificates on the first day of the examination will not necessarily, on that account, be excluded from the examination, but he will be liable to have his name removed by the Civil Service Commissioners from the list of competitors at any time before the declaration of the result of the examination.

We can now proceed to deal with Woolwich and Sandhurst in detail.

I.—The Military Colleges.

(A)—ROYAL MILITARY ACADEMY, WOOLWICH.

For Candidates for Commissions in the Royal Artillery and Royal Engineers. Admission is obtained by Open Competitive Examinations held in June and November. The fee for examination in London is £2, at any other appointed centre, £3.

* Candidates are strongly recommended to provide themselves with the *latest official regulations*. They are supplied by Messrs. Wyman & Sons, Fetter Lane, E.C. (price 1½d. post free).

The age for admission is between 18 and 19½. Candidates must be within these limits on the 1st of December for the Winter Examination, and on the 1st of June for the Summer Examination.

A Cadet pays £150 per annum while at the R.M.A., though reductions are made in the case of sons of officers, &c. The charge for uniform, &c., on first joining is £35, and an extra £15 in the third term. Each Cadet receives an allowance of 3s. a day for messing.

The course is for two years.

The Medical Examination takes place after the Competitive Examination.

The subjects of the examination, and the maximum number of marks obtainable for each subject, are as follows:—

CLASS I.						
				Marks.		
English	2,000	} Compulsory.	
French or German	...	...	...	2,000
Mathematics I	...	...	...	2,000
CLASS II.						
				Marks.		
Mathematics II	2,000	} Optional.	
History	...	...	...	2,000
German or French	...	...	...	2,000
Latin or Greek	...	...	...	2,000
Science	...	...	...	2,000

All the subjects of Class I must be taken up. Only two of the subjects of Class II may be taken up, and if one of these subjects be a modern language, it must be different from the modern language selected in Class I.

In addition to the above-named subjects candidates may take up freehand drawing, to which 250 marks will be allotted.

The marks allowed to each candidate in the several subjects in which he has been examined will be summed up,

and the resulting total will determine the place of the candidate in the competitive list; the successful candidates being those who stand at the head of the list up to the number of cadetships offered.

SYLLABUS OF SUBJECTS FOR THE FOREGOING EXAMINATIONS.

ENGLISH.

1. English essay.
2. *Précis*.
3. Reproduction of passages read out.

HISTORY.*

1. A general paper on English history.
2. *Either (a)* A period of European history defined beforehand by the Civil Service Commissioners.

Or (b) A general paper on ancient history, *i.e.*, Greek history to Alexander, and Roman history to Domitian, inclusive.

3. A military biography, prescribed annually. Life of Marlborough for 1903 and 1909.

FRENCH.

1. Translation from French.
2. Translation into French.
3. Colloquial—(1) examiners to converse, candidate to interpret in English; (2) candidate to talk in French.
4. An essay or original letter on two or more alternative subjects.

GERMAN.

As for French.

LATIN.

1. Translation of English into Latin.
2. Translation of Latin into English.
3. *Either* Latin verse composition ;
- Or* a paper of general questions on Roman literature.

GREEK.

As for Latin.

*All candidates must have a sufficient knowledge of the geography of countries studied.

MATHEMATICS I.

Arithmetic.—As in elementary mathematics for a "leaving" or "qualifying" certificate (*vide* above), with more difficult questions, and exercises involving the use of four-figure logarithms. Use of the slide rule.

Geometry.—Geometrical drawing and practical geometry of plane figures, including the use of Marquois and other scales.

The substance of Euclid. Books I to VI.* The special treatment of incommensurables will not be required.

Proportion may be treated algebraically, and the complications of Euclid's definitions and nomenclature avoided.

Algebra.—As in elementary mathematics, together with indicies and the simpler properties of surds; graphs of the simpler algebraic functions; quadratic equations; use of graphs in solving equations, and in illustrating and solving practical questions; rate of variation of a function and gradient of a graph; graphic interpolation.

Grasp of elementary principles and readiness in practical application will be looked for, but great skill in analytical transformation will not be demanded.

Trigonometry.—Up to and including solution of plane triangles; graphs of trigonometrical functions; use of four-figure tables.

Readiness in straightforward practical applications, but no great analytical skill will be demanded.

Dynamics.—Graphical proofs of formulæ for uniformly accelerated motion; impact, work, energy, circular motion.

Statics.—Composition and resolution of forces; parallel forces; centre of gravity; three-force problems; friction; mechanical powers, e.g., lever, wedge, pulleys, &c.

Practical Work.

Experimental verification of the above theoretical work, such as the measurement of velocity, impact, work, energy, &c. Exercises in drawing useful graphical demonstrations. Construction of the mechanical powers.

MATHEMATICS II.

Includes Mathematics I, together with—

Geometry.—The substance of Euclid, Book XI, with application to mensuration of solids. Elements of solid geometrical drawing.

*Schedule A and B of geometry issued by the University of Cambridge may be referred to as indicating the scope required.

Algebra.—Elementary knowledge of the use of indeterminate co-efficients, especially with partial fractions. A working knowledge (without rigorous fundamental demonstrations) of the elementary infinite series for

$$(1 + x)^m, e^x, \log(1 + x), \sin x, \cos x, \tan^{-1}x,$$

and their use in approximate calculations, especially in finding the slope at a given point of the graph of a function.

Differential and Integral Calculus.—A working knowledge of the notation and fundamental principles in so far as they can be illustrated graphically, with simple applications to the properties of curves, to turning-values, and to easy mechanical and physical problems.

Further discussion of geometrical applications to be treated under co-ordinate geometry.

Co-ordinate Geometry.—The elementary principles and methods, with straightforward applications to the straight line, circle, ellipse, parabola, hyperbola, cycloid, catenary, logarithmic spiral, and other curves of common occurrence; also to the straight line and plane in space of three dimensions.

A systematic knowledge of conics (either geometrical or analytical) is not required; thus, for example, the general theory of the classification curves of the 2nd degree would not be asked for. The methods of the calculus may be used freely.

Mechanics.—Elementary statics of liquids and gases.

Practical Work.

The practical syllabus of Mathematics I., treated with greater fulness and more reference to exact measurement, and in addition, centre of gravity and centre of pressure; specific gravity; barometer; Boyle's law; laws of pendulum; determination of g ; impact, coefficient of restitution; compressibility, rigidity; Young's modulus by stretching and flexure.

SCIENCE.

(PHYSICS AND CHEMISTRY.)

The Papers on this subject will be framed so that the candidates will be able to obtain about three-fourths of the total marks allotted by showing a thorough knowledge of either Chemistry or Physics.

PHYSICS.

In addition to the subjects of the qualifying examination.

Heat.—Simple thermometry. Numerical work on expansion, specific heat and latent heat, vapour pressure. Simple experiments on radiation, conduction, and convection of heat. Calorimetry. Mechanical equivalent of heat.

Light.—Fuller treatment of the subjects of the qualifying examination. Experimental proof of laws of refraction and reflection. Total reflection. Dispersion. The spectroscope. Complementary colours of objects. Use of spectacles. Theory of infinitely thin lenses. Simple telescope. Microscopes. Outline of wave theory.

Magnetism.—Elementary quantitative notions of strength of pole, magnetic force due to a pole. Magnetic moment. Comparison of magnetic fields and moments.

Statical electricity.—Elementary quantitative notions of electric density, potential and capacity, with application to condensers. General explanation of electrostatic machines.

Current electricity.—Current, electromotive force and resistance. Electro-chemical equivalents. Electromagnetism. The broad principles of the induction coil, telephone, dynamo, and motors. Elementary idea of electric waves.

Practical Work.

Surface tension. Co-efficients of expansion of a solid and of a liquid. The thermometer. Specific heats. Latent heats. Focal lengths of lenses. Photometry. Minimum angle of deviation of a given ray by a prism.

Comparison of magnetic fields and moments. Resistances of wires and cells. The Wheatstone bridge. Comparison of electromotive forces. Electro-chemical equivalent.

CHEMISTRY.

In addition to the subjects of the qualifying examination.

Laws of chemical combination. Equivalents. Atoms and atomic weights. Avogadro's law. Molecules and molecular weights, vapour density. Calculations based on chemical formulæ. Valency.

Study of the following non-metallic elements: Hydrogen, oxygen, nitrogen, sulphur, carbon, chlorine, with their more simple and common compounds, with special stress on oxides, acids, and bases, allotropy, oxidation, and reduction.

Commercial preparations to be omitted, except in cases where such preparations are particularly instructive, e.g., Brin's process for the preparation of oxygen. In commercial preparations, such as in the preparation of sulphuric acid, all details of the structure of apparatus to be omitted.

The metals, sodium, zinc, iron, lead, tin, copper.—An elementary study of their oxides and more common salts.

Technical details and metallurgical processes to be omitted.

Practical Work.

Formation of an oxide of one of the before-named metals.

Reduction and separation of the metal from an oxide of one of the before-named metals.

Preparation of chlorine, hydrochloric acid, ammonia, nitric acid, sulphur dioxide, carbon dioxide.

Simple gravimetric experiments; examples of synthesis and analysis, preferably with the metals before mentioned. Formation of a nitrate, chloride or sulphide of one of the before-named metals. Decomposition of a salt, or compound of one of these metals by heating in air or with an acid, as sulphuric.

Volumetric analysis—Determination of the equivalent of a metal, e.g., magnesium. The making of a standard or normal solution of acids and alkalies and use of same. Making a normal acid solution, and using it for finding the hydrogen equivalent of the metal.

FREEHAND DRAWING.

Voluntary Subject.

The following is published as indicating the scope of the Mathematical and Science Courses at the Royal Military Academy:—

MATHEMATICS.

The Mathematical Course is partly obligatory and partly voluntary

The obligatory course comprises:—

1. Plane trigonometry
2. Co-ordinate geometry, with special reference to the graphical representations of equations and the elementary ideas of the calculus.
3. Mechanics, including statics, stability of structure, strength of materials, dynamics, hydraulics, and mechanism, treated theoretically and experimentally.
4. Geometrical optics and construction of telescopes.

The voluntary course comprises:—

1. The more advanced treatment of the subjects of (2) and (3) of the obligatory course.

2. The elementary theory of probability.
3. The differential and integral calculus, with special reference to mechanical and physical problems.
4. Spherical trigonometry.

CHEMISTRY.

General Physics and Heat.

1. The kinetic theory of gases and the gas laws. Barometers. Thermometry and pyrometry. Expansion calorimetry. Vapours. Low temperatures. Mechanical equivalent of heat.

2. Inorganic Chemistry.—Elementary chemical theory. Thermochemistry. Preparations and properties of the principal non-metallic elements and their compounds.

3. Explosives.—Gunpowder, guncotton and nitro-glycerine, materials and manufacture. Cordite and smokeless powders. Picric acid and picrates. Fulminates.

Practical Work.

4. Physics.—Specific gravity. Co-efficients of expansion. Melting points. Calorimetry.

5. Chemistry.—Preparation of salts of various metals. Analysis of mixtures of salts and alloys. Use of standard solutions. Simple gravimeters analysis. Preparation of some nitro-compounds used in explosives.

ELECTRICITY AND MAGNETISM.

Fundamental laws of current electricity. Voltaic cells. Circuits. Simple testing and resistance measurement. Elementary magnetism. Galvanometers. Wheatstone's bridge method of resistance measurement. Work and power: heating of currents; units. Measurement of E.M.F. and P.D. Measurement of current. Electro-magnetism and electro-magnets. Internal resistance of batteries. Current induction. Telephones. Revision. General ideas of statical electricity. Practical details.

(B)—ROYAL MILITARY COLLEGE, SANDHURST.*

For Candidates for Commissions in the Cavalry, Infantry, and Army Service Corps. Admission is obtained by Open

* Candidates are strongly recommended to provide themselves with the latest official regulations. They are supplied by Messrs. Wyman & Sons, Fetter Lane, E.C. (price 1½d. post free).

Competitive Examinations held in June and November. The fee for examination in London is £2, at any other appointed centre, £3.

The age for admission is between 18 and 19½. Candidates must be within these limits on the 1st of December for the Winter Examination, and on the 1st of June for the Summer Examination. Candidates for Commissions in the West India Regiment may be admitted up to the age of 21.

The course is for 18 months.

A Cadet pays £150 per annum while at the R.M.C., though reductions are made in the case of sons of officers, &c. The charge for uniform, &c., on first joining is £35. Each Cadet receives an allowance of 3s. a day for messing, &c.

The Medical Examination takes place after the Competitive Examination.

King's Cadets, Honorary King's Cadets, Indian Cadets, and Pages of Honour are admitted after a Qualifying Examination only.

The subjects of Examination (the Syllabus is the same as for Woolwich) are as follows :—

CLASS I.				Marks ^e	
English	2,000	} Compulsory.
French or German	...	...	...	2,000
CLASS II.				Marks.	
Mathematics I	2,000	} Optional.
" II	...	..	..	2,000
History	...	...	...	2,000
German or French	..	...	...	2,000
Latin or Greek	...	...	...	2,000
Science	...	...	...	2,000

All the subjects of Class I may be taken up. Only two of the subjects of Class II may be taken up, and, if one of

these subjects be a modern language, it must be different from the modern language selected in Class I.

In addition to the above-named subjects candidates may take^{up} freehand drawing, to which 250 marks will be allotted.

The marks allowed to each candidate in the several subjects in which he has been examined will be summed up, and the resulting total will determine the place of the candidate in the competitive list; the successful candidates being those who stand at the head of the list up to the number of cadetships competed for.

II.—* Militia and Imperial Yeomanry.

Nearly 300 Commissions are annually distributed among Subalterns of the Militia and Yeomanry, and are competed for twice a year, in March and October: forms of application must be received by the 1st February and the 1st August respectively. Before presenting themselves for the Military Examination candidates must have "qualified" (as explained above) for the general examination set for entrance to Woolwich and Sandhurst. A candidate is exempt from the "Qualifying" examination if he is a B.A. or M.A. of one of the following Universities:—

Oxford	Aberdeen
Cambridge	The Royal University,
Dublin	Ireland
Durham	Manchester
London	Liverpool
Edinburgh	Leeds
St. Andrew's	Birmingham
Glasgow	Wales

or a B.Sc. of Edinburgh, St. Andrew's, Glasgow, or Aberdeen;

* Cadets should obtain the latest official regulations. They are supplied by Messrs. Wyman & Sons, Fetter Lane, E.C. (Price 1½d., post free.)

or has passed one of the following examinations:—

Oxford—The First Public Examination.

Cambridge—One of the parts of the General Examination, or Part I of any Tripos Examination.

Dublin—The Final Examination of the Senior Freshman year; or the Final Examination of the School of Engineering.

Durham—The First Year's Examinations.

London—The Intermediate Examinations in Arts, Law, Science, or Medicine.

Scottish Universities—The Examination of Candidates for the Army; or the Preliminary Examination and the First Science Examination.

The Royal University, Ireland—The Second University Examination in Arts, or the Second Professional Examination in Engineering.

Victoria University, Manchester—The Intermediate Examination.

The University of Wales—Completion of three "Intermediate" courses in the Faculty of Science, or of four courses in the Faculty of Arts.

Birmingham—The Intermediate Examination in Arts or Science.

Liverpool—The Intermediate Examination in Arts, Science, or Engineering.

Leeds—The Intermediate Examination in Arts or Science.

The subjects of the Military Examination and the maximum marks obtainable in each subject will be as follows:—

	Marks.
(1.) Military History and Strategy (2 papers)	1,000
(2.) Tactics (2 papers)	1,500
(3.) Military Engineering (2 papers) ...	1,000
(4.) Military Topography (2 papers) ...	1,000
(5.) Military Law (1 paper)	250
(6.) Military Administration and Organization (1 paper)	250

In addition to obtaining a sufficiently high place in order of merit, a candidate will be required to obtain the qualifying minimum of .4 of the marks in each paper, and .5 of the aggregate.

The number of commissions to be allotted to successful competitors at each of the half-yearly competitive examinations will vary according to the requirements of the service. The number of vacancies open to competition will be published about three months before the date of the examination.

The names of the successful candidates will be published in order of merit. Each candidate will be informed of his place on the list, and the marks obtained by him in each subject.

The following is a Summary of the Syllabus of the Examination in Military Subjects.

1. Military History and Strategy—

- (a) One general paper on military history and the principles of strategy.
- (b) One paper on a campaign (which will be notified in Army Orders in January or July).

2. Tactics—

- (a) One paper on the matter contained in "Combined Training," together with questions on the history and development of the tactics of the three arms from 1740, inclusive, to the present date
- (b) One paper on the application of tactical principle to schemes worked out on a map

3. Military Engineering—

- (a) One paper on the subject matter of the "Manual of Military Engineering, 1905" (Part I)
- (b) Application of above principles to schemes worked out on a map

4 Military Topography—

- (a) One theoretical paper on the subject matter contained in the "Manual of Map Reading and Field Sketching, 1906"
- (b) One paper to test neatness and accuracy in plotting and finishing a military sketch, including the plotting from a Field book, drawing a map of imaginary country from data given, with appropriate conventional signs

5. Military Law —One paper

The use of 'The Manual of Military Law' and 'The King's Regulations' will be allowed for answering this paper.

6 Military Administration and Organization. —One paper.

III. University Candidates.* About 100 Commissions are at present offered to University Candidates, and the number will be largely increased. Parents are strongly advised to consider the great advantages offered to University men who seek entrance into the Army, for the War Office are evidently anxious to secure candidates of this type. Professor T. Hudson Beare, Convener of the Military Committee of the University of Edinburgh, remarks: "There is a growing demand for Army Officers of

* For an estimate of the expenses at Oxford or Cambridge consult page 3.

wide, general education, such as may be obtained by an unfettered course at a Secondary School followed by a University training. There are many administrative positions open to a soldier in which a University education would be of great use to him, and such an education would form a mental, and, at times, a material resource after he retires from active service. There are two cases in which this method of obtaining a Commission may be recommended: (1) A boy's parents may have made up their minds as to his profession too late for him to enter the Army through Woolwich or Sandhurst; (2) In many cases parents may prefer that their boy should have a general education, instead of prematurely specialising in an Army Class, in order that he may be fitted for other occupations in case he should for any reason decide ultimately against going into the Army. In these cases it is well that both parents and boys should know that there is this method of obtaining a Commission."

Under the University scheme a boy would complete the school curriculum at the age of 18 or 19, would enjoy a University training up to an Arts or Science degree, and on graduating would simultaneously obtain a Commission in the Cavalry, Artillery, Infantry, or Indian Army. The age at which a Commission is obtained in this way at the Scotch Universities (where men enter at an early age) is practically the same as that at which it is usually obtainable through Woolwich or Sandhurst. At Oxford and Cambridge men do not usually enter until 19: this would mean that a Commission could not be obtained before 22, but the advantages of a

career at Oxford or Cambridge would be well worth the delay. Moreover, a degree with First-Class Honours gives a year's antedate to the Commission.

1. Commissions in the Cavalry, the Royal Artillery, the Infantry, Indian Army, and the Army Service Corps, will be granted each half-year on the nomination of recognized Universities, or of groups of recognized Universities, as indicated hereafter, to those candidates who have fulfilled certain conditions of academic and military qualification.*

2. Subject to such additions or alterations as the Army Council may from time to time determine, the following is the list of recognized Universities, arranged as units for purposes of nomination:—

- (a) The University of Oxford.
- (b) " " Cambridge.
- (c) " " Dublin.
- (d) " " London.
- (e) The Universities of Scotland.
- (f) { (1) The Victoria University of Manchester.
The University of Liverpool.
Leeds.
(2) " " Durham.
" " Birmingham.
" " Wales.
The Royal University of Ireland.
- (g) Such chartered Universities in the Colonies as have established courses of military instruction approved by the Army Council.

3. Each University, or group of Universities in the United Kingdom, will appoint a Nomination Board, to which the War Office will add one or more military members, who will have a veto on any selection.

The approved Universities in the Colonies will, until groups have been formed, each appoint a Board.

[The names of fully qualified candidates who have been nominated by the Nomination Board will be rendered to the War Office by the 15th January and 15th July each year.]

* Candidates selected for the Indian Army will, in the first place, be gazetted as 2nd Lieutenants in the Unattached List of the British Army under the conditions set forth in the pamphlet "Information regarding Appointment, Promotion, Pay, &c., in His Majesty's Indian Army."

4. A candidate for nomination—

- (a) Must be between the ages of 20 and 25* on the 1st of April, or on the 1st of October, immediately preceding the half-yearly nomination for which he presents himself.
- (b) Must be unmarried.
- (c) Must be, in the opinion of the Army Council, in all respects suitable to hold a commission in the regular forces.

5. A candidate must—

- (a) Reside for three academic years at an approved University or college of the same.
- (b) Qualify for a degree in an approved subject or group of subjects.
- (c) Produce a certificate of good conduct from the head or other competent authority of the University, or college of the same, in which he has resided.

At the Scottish Universities a candidate must have graduated after a course of study extended over three academic years.

At the London University, and certain others where there are both internal and external students, a candidate must be an internal student, which is defined as "one who has completed a three years' course under recognized teachers."

6. Candidates may graduate in any of the subjects, or groups of subjects current at the several Universities, with the exception of Theology, Medicine, Music, and Commerce.

7. A candidate who has graduated with first-class honours in an approved subject or group of subjects, or with other distinctions recognized by the Army Council as equivalent thereto, will, if nominated, be entitled to count one year of seniority on obtaining his commission.

8. A candidate for a commission in the Royal Artillery must produce evidence satisfactory to the Nomination Board that he has duly qualified in the mathematical subjects set forth in Appendix II.

9. In addition to the academic qualifications specified in paragraph 5 above, a candidate for nomination must present certificates of military qualifications, practical and theoretical.

* A candidate for nomination to the Indian Army must be within the ages of 20 and 24 on the dates named.

In this connection—

- (a) He will be required, in addition to the military instruction which will form part of the curriculum during his residence at the University, to be attached to a Regular unit for six weeks in each of two consecutive years, or 12 weeks in one year, and to obtain a satisfactory certificate as to his proficiency (Appendix III)

In the case of students at Colonial Universities, the attachment may be to a unit of the Permanent Forces of the Colony

If the candidate is an officer of the Militia or Yeomanry, two trainings with his Militia or Yeomanry unit will count as equivalent to a period of six weeks with a Regular or Permanent unit. In the case of Universities in the United Kingdom, a candidate who is an officer in the Militia, Yeomanry, or Volunteers should apply through his commanding officer for attachment to the Regular Forces

If the candidate is not an officer of Militia, Yeomanry or Volunteers, he should apply through the authorities of his University to the Secretary, War Office. Arrangements will then be made, firstly for his appointment to a temporary commission on the unattached list for Auxiliary Forces, and secondly for his attachment to the Regular Forces*. In the case of such a supernumerary or unattached officer the compulsory provision of uniform will be limited to the provision of the service dress with sword, &c

In the case of the Colonial Universities attachment to a Regular or Permanent unit will be arranged between the University and the general officer commanding-in-chief or Colonial authorities, as the case may be

During these periods of attachment no candidate who is a supernumerary or unattached officer will receive other pay or allowances from Imperial funds. Nor will

* Candidates in applying for attachment to the Regular Forces should state the time during which they wish to be attached, and the unit or branch to which they desire attachment. Their wishes will be considered as far as possible.

any other officer of the Militia, Yeomanry or Volunteers of the United Kingdom be paid, unless the attachment is the equivalent of a course of instruction which he is eligible to attend with pay, under the regulations of the force to which he belongs.

- (b) He will be required to qualify in military subjects at an examination, which will be held commencing on the last Tuesday in March and on the second Tuesday in October of each year at the several Universities under instructions from the War Office.

10. Each University in the United Kingdom will furnish to the War Office, not later than 1st February, and 1st August, lists of candidates for examination in the following March and October respectively, stating the groups of subjects they wish to take up.

Lists from Universities in the Colonies should reach the War Office by 1st January for a March examination, and by 1st July for an October examination.

The subjects* of examination, and the marks allotted thereto, will be as follows:—

	Marks.
Group A.—1 Military History and Strategy (2 papers)	1,000
2 Tactics (2 papers)	1,500
Group B.—3 Military Engineering (2 papers) ...	1,000
4 Military Topography (2 papers) ...	1,000
Group C.—5 Military Law (1 paper)	250
6 Military Administration (1 paper) ..	250

Candidates who so desire may take up the examination in two parts. For this purpose the subjects are divided into groups as shown. Either A or B may be taken first. C cannot be taken alone, but must be taken with either A or B.

To qualify, a candidate must obtain .4 in each paper, .5 in the aggregate of all the papers taken at any one examination.

A candidate who fails in one paper only, but who obtains .5 in the aggregate, of the remaining papers then taken, may be re-examined in that paper only.

* The Syllabus is the same as that given above for Officers of the Militia and Imperial Yeomanry.

A candidate who fails in more than one paper, or in the aggregate, must be re-examined in all the papers taken at that examination.

11. Notice will be given from time to time of the number of commissions which will be allotted to University Candidates and of the proportion assigned to each nominating unit or group.

In the case of group (f) the number of commissions allotted will be divided evenly between the two sub-groups. Any commissions not taken by one sub-group will be available for the other sub-group.

If any University, or group of Universities, in the United Kingdom, shall not be able in any half-year to fill up the number of commissions allocated to it, such unallocated surplus will be at the disposal of the Army Council, to be allocated to any other University or group of Universities, which may have qualified candidates over and above the number originally assigned to it.

To provide for such contingencies, any said University, or group of Universities, may prepare a supplementary list of qualified candidates both for ordinary commissions and for antedated commissions.

12. The candidates nominated by Universities in the United Kingdom each half year will be arranged in one list, as follows:—

One name will be taken successively from the list of nominations of each University, the order of the Universities shown in paragraph 2 being changed in cycle each successive half year.

Candidates nominated by Colonial Universities will also be arranged in one list. Names will be taken successively, and the order of the Universities changed in cycle in the same manner as for Universities in the United Kingdom.

Honours men who are entitled to antedated commissions, under paragraph 7, will take precedence before all other candidates.

Medical Examination.

13. The selected candidates will be examined by a Medical Board and no candidate will be accepted unless he be pronounced physically fit for His Majesty's Service. Boards will assemble in London, Dublin, and Edinburgh for candidates in the United Kingdom.

In the Colonies, Boards will be convened by the Governor or other proper authority.

The general conditions as to height, weight, chest measurement, eye-sight, &c., are given in Appendix I of the Regulations.

IV. By Promotion from the Ranks. It may at first be thought that this avenue, owing to the small number of Commissions obtained by it, is hardly worth consideration. It may, however, not be generally known that there are at the present time over 700 officers in the Army holding the King's Commission who enlisted as private soldiers, but it must be borne in mind that this figure includes a large number of Quarter-masters, who do not usually obtain a Commission until the age of 40. A recent Parliamentary return shows that the total number of Commissions granted from the ranks during the years 1885-1906 (inclusive) was 1,738; the number of Commissions granted, excluding those from the ranks, was 15,923. Thus during a period of twenty years the number of these Commissions was over 10 per cent. In the case of the Royal Artillery and the Royal Engineers a Commission can only be secured through the intermediate stage of the Warrant rank.

Condition of Promotion to 2nd Lieutenancy in the Cavalry and Infantry (as distinct from appointments to Quarter-masterships). For specially meritorious service, or for distinguished action on the field of battle, a soldier may at one bound win a Commission: surely the possibility of such an honour speaks much for the high chivalry of the British Army, it fires the imagination and makes the heart

beat faster. Apart from this exceptional case, a recommended candidate for promotion must fulfil the following conditions:—

- (1) He must not be of lower rank than that of Corporal.
- (2) He must have had not less than two years' service.
- (3) He must be under 26 years of age.
- (4) He must be unmarried.
- (5) He must hold a First-Class Certificate of Education.
- (6) He must be medically fit for service at home and abroad.

It is practically certain that the trend of events in the Army will make these promotions more frequent in the future than they have been in the past. A note of warning, however, must be clearly sounded: this is not the avenue for a loafer or a "ne'er-do-well," who has failed owing to laziness to obtain a Commission in the more usual way; it is the avenue for an earnest, well-educated, determined youth, who has either had hard luck in the examination, or cannot afford the expenses of Woolwich or Sandhurst, and yet is devoted to the profession of arms. It is a chance worth the risk, if he is prepared, in the event of a Commission never coming, to continue to serve happily in the ranks. This will be the test of his "grit." The "gentleman-ranker," not, indeed, the type so luridly described by Kipling, but he who is a gentleman both in character and in

name, who starts with a good education, is tactful, obliging, determined, making the utmost of each opportunity as it comes, may do worse than take his chance of a Commission from the Ranks.

Regimental Pay. A parent must calculate that a young officer's original outfit will cost £100, and in Cavalry Regiments about £150, and that it will be necessary to supplement his regimental pay for some years to the extent of from £50 to £150 in the Royal Artillery and Infantry, and from £300 upwards in the Cavalry. There is an earnest desire on the part of the Military Authorities to lessen expenses, so that a young Officer's pay may be more adequate to meet the demands made upon it. Expenses vary widely in the different Regiments, and it would be well, before selecting a Regiment, for the parent to write for information on the question of expenses to the Colonel, who will usually be ready to give the needful guidance. A young officer's pay in the Royal Army Medical Corps, Royal Engineers, Army Service Corps, and Indian Army should be sufficient to enable him to live on it: this is certainly the case in the Indian Army, where his pay begins at about £300 a year, but for this he must be exceptionally well qualified.

The following tables will show the rate of daily Regimental pay, exclusive of certain allowances, and the compulsory age for retirement with scale of retired pay:—

RETIRED PAY.

Rank.	Age of Compulsory Retirement.	Retired Pay.
Captain ...	45	£200
Major ...	48	£300
Lieut.-Colonel ..	55	£365 to £450
Colonel ...	57	£420 to £500
Major-General ...	62	£700
Lieut.-General ..	67	£850
General ...	67	£1,000

Royal Army Medical Corps. A candidate for a Commission must be between 21 and 28, he must possess a registrable qualification to practice, under the Medical Acts in force in the United Kingdom, and must fill in a form of application and declaration to be obtained from the Director-General, Army Medical Service, War Office, London, S.W. This form must be submitted to the Director-General in sufficient time to permit of enquiry being made of the authorities of the Medical School in which the candidate pursued his studies. If such enquiry is satisfactory, a candidate will be allowed to compete for a Commission; if approved, he will then be examined as to physical fitness by a Board of Medical Officers. Entrance Examinations are held twice a year, in January and July, and the fee is £1. If

successful, a candidate will be appointed Lieutenant on probation, and will be required to pass through such courses of instruction as the Secretary of State shall decide, and, after passing the examinations in these subjects, and satisfying the Director-General that he is a suitable person for permanent appointment, his Commission as Lieutenant will be confirmed, and will bear the date of his appointment as Lieutenant on probation. The Medical service of the Army is no longer a department, but a Royal Corps, and, as such, forms an integral part of the Army.

The Royal Army Medical Corps now offers such substantial attractions that it may be well to set forth in fuller detail the advantages of Pay, &c., which are obtainable:—

(a) *Daily Regimental Pay* (exclusive of allowances).

Lieutenant on Probation and Lieutenant	£0	14	0
Captain	...	0	15 6
After 7 years' total full-pay service	...	0	17 0
After 10 years' total full-pay service	...	1	1 0
Major	...	1	3 6
After 3 years' service as such	...	1	6 0
Lieutenant-Colonel	...	1	10 0
Lieutenant-Colonel after 3 years as such	...	1	15 0
An officer on promotion to the rank of Colonel is removed from the Corps, and after 4 years' service in the rank is placed on half-pay			
Colonel	...	2	5 0
Surgeon-General	...	3	0 0
Director-General, Army Medical Service (yearly, no allowances)	2,000	0	0

(b) Additional Pay.

Officer not serving on the Head Quarters Staff, appointed a Member of the Advisory Board (a year) ...	£150	0	0
Officer under the rank of Lieutenant-Colonel, holding an appointment as specialist (daily) ...		0	2 6

(c) Charge Pay.

(a) Officer in charge of a General or other Hospital or a Division of a General Hospital. If the number of equipped beds amounts to:—

	Daily.
50 beds ...	£0 2 6
100 „ ...	0 5 0
200 „ ...	0 7 6
300 „ ...	0 10 0

(b) Officer in command of the Dépôt R.A.M. Corps ...	0 5 0
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(c) Senior Officer with an Army in the Field—Rate to be fixed by Army Council.

(d) The Officer, if under the substantive rank of Colonel, holding the appointment of Senior Medical Officer in a command abroad, or of an administrative Medical Officer, if the number of soldiers are 1,550 or upwards (daily) ...	0 5 0
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In addition to his Regimental Pay an Officer is entitled to one or two servants, quarters, fuel and light, and forage (Field Officer only, Major, and higher ranks) or a daily allowance in lieu. The latter varies from 2s. 3d. to 10s. for the highest rank.

The Corps, which prior to the Royal Warrant of 1898, was merely a Department of the Army is now one of the arms of the Regular Forces. The only Departments now are the Chaplain's Department, the Army Ordnance Department, and the Army Pay Department.

RETIRED PAY, R.A.M.C.

				Daily.
Surgeon-General	...	...	...	£2 0 0
Colonel—				
Under 4 years' service as such, but				
with 30 years' total service	...			1 10 0
After 4 years' service as such	...			1 15 0
If not qualified as above	...		rate of Lieut.-Col.	
Lieut-Colonel—				
After 20 years' service	...	...		£1 0 0
" 25 "	"	"	...	1 2 6
" 28 "	"	"	...	1 7 6
Major—				
After 20 years' service	...	...		1 0 0

GRATUITIES.

Major, or Captain, after

5 years' service in the rank of

Captain ... 1,000 0 0

Major after 3 years' service as such ... 1,800 0 0

" " 6 " " " ... 2,500 0 0

There are several appointments open to retired Officers—Recruiting, Medical Charge of Depôts, &c., the holders of which receive £150 yearly in addition to their pension.

We are informed that in order to utilise the valuable clinical field provided by the Queen Alexandra's Military Hospital the Army Council have

decided to associate that Hospital with the Royal Army Medical College as an integral part of its medical school for the purpose of furthering the earlier and advanced education of officers of the Royal Army Medical Corps.

They have further decided to obtain the assistance and co-operation of certain acknowledged leaders of the civil medical profession as consultants in medicine and surgery, whose ripe experience and professional skill in another field will be of great benefit to the Army Medical Service, and will conduce to the efficiency of the Hospital as regards both the treatment of the sick and the investigation of diseases incidental to military life. These appointments will have the further effect of fostering among the civil members of the profession a greater interest in the work of the Army Medical Service, and in those special problems with which its officers have to deal.

The following appointments have been approved:—

To be Consulting Surgeons—Mr. A. E. Barker, Professor of Surgery, University College of London; Mr. A. A. Bowlby, Surgeon to St. Bartholomew's Hospital; and Mr. G. H. Makins, Surgeon to St. Thomas's Hospital.

To be Consulting Physicians—Dr. J. Mitchell Bruce, Consulting Physician, Charing Cross Hospital; Dr. J. Kingston Fowler, Physician to Middlesex Hospital; and Dr. W. Osler, Regius Professor of Medicine, University of Oxford.

Indian Medical Service.—For details concerning this Service consult the chapter on "Medicine."

Army Chaplaincies. It only remains to mention the very attractive career that is offered to the young Clergyman who loves soldiers, and is eager to seize the splendid opportunities of ministry, which the heroic times of war and the more difficult times of peace present. If he is to win the confidence of officers and men, he must be a sincerely good fellow, full of tact, quiet, humble, manly, and, if the high privilege comes to him of comradeship on the field of battle, men will the more readily listen to him when he speaks of duty, and honour, and self-sacrifice.

Army Chaplaincies are obtained by selection after application to the Chaplain-General, and carry with them military rank. A candidate must have been three years in Priest's Orders, and his age must not exceed 35.

RANK—The Chaplain General ranks as Major General, 1st Class Chaplains as Colonels, 2nd Class Chaplains as Lieut.-Colonels, 3rd Class Chaplains as Majors, and 4th Class Chaplains as Captains.

PAY—A 1st Class Chaplain receives £1 a day, and his pay, with allowances, will reach about £500 a year; 2nd Class Chaplains receive 17s. 6d. a day, with allowances; 3rd Class Chaplains 15s.; and 4th Class Chaplains 10s., which is increased to 12s. 6d. after five years' service.* The Chaplain General receives £1,000 per annum.

RETIRED PAY—The Chaplain General retires after 5 years' service on £200 yearly.

10	„	„	300	„
15	„	„	400	„
20	„	„	600	„

His retired pay cannot exceed £600, and he must retire on obtaining the age of 65.

Chaplains retire voluntarily after

20	years' service	on	10s. 0d. daily.
25	„ „	13	0 „
30	„ „	17	6 „

Chaplains must retire at age 60, or under exceptional circumstances at age 65, at latest, and their retired pay will then be, after

15	years' service	10s. 0d. daily.
20	„ „	12 6 „
25	„ „	15 0 „
30		6

Select lists of Schools and Army Tutors (for fuller information consult Appendices IV and V):—

Durham School.	St. Lawrence College,
Sedbergh School.	Ramsgate.
Eastbourne College.	Christ College, Brecon.
Bromsgrove School.	Plymouth College.
Giggleswick School.	Monmouth School.
Trent College.	Dover College.
King's School, Canterbury.	Brighton College.
King's School, Rochester.	Dean Close School,
	Cheltenham.
	Carlisle School.

Army Tutors:—

Lt.-Col. WALTER H. JAMES, Bedford.
 Major COMPTON and Mr. W. A. FULLER, Southsea.
 Major H. F. TRIPPEL, Richmond, Surrey.
 Major E. C. HEATH, Folkestone.
 Dr. W. GREENWELL LAX, W. Kensington.

ii.—The Navy.

They left us a kingdom none can take,
The realm of the curling sea,
To be ruled by the rightful sons of Blake
And the Rodneys yet to be.

HENRY NEWBOLT.

The safety of the Empire ultimately depends upon our Navy. Behind us lies the splendid record of the achievements of British sailors, of Hawkins, Howard, Drake, Blake, Grenville, of Hawke, and Rodney, and Nelson, and it is not surprising that there are few lads who have not been fired with enthusiasm for the glorious life of the sea. To a youth who is sound in wind and limb, who has strong within him a love of adventure, who is ready to take trouble and is not afraid of roughing it, the Royal Navy offers a career at once attractive and advantageous. As compared with the Army, the expenses of preparation for the Navy are lighter and the pay is better, and in the healthy discipline of the gun-room mess a youngster has few temptations to extravagance. A parent must first of all be sure that his son is medically fit, for the requirements of the Navy are exacting. A weak constitution, eruptions on the skin, bad teeth, stammering, defective eyesight or hearing, varicose veins, malformation of any limb, will mean rejection at the hands of the naval medical officers.

All officers for the Executive and Engineer Branches of the Royal Navy or for the Royal Marines will enter the service in future as Naval Cadets under identical conditions between the ages

of 12½ and 13, and will be educated and trained together until passing as Sub-Lieutenants at the age of 19-20.

At the close of 1902 a memorandum was published by the Admiralty indicating great changes in the regulations which govern the entry and training of naval cadets. These changes (which we will call the *New Scheme*) came into force for the first time in March, 1904.

The New Scheme now stands alone as the only method of entering the three branches of the service—the Executive, the Engineer, and the Marine.

The New Scheme.

Appointments to Naval Cadetships* will be made by nomination, subject to the nominees passing a qualifying examination. Candidates who fail to pass will not be allowed a second trial. No nomination will be given to boys whose parents or guardians do not declare for them that they are prepared to enter any one of the three branches of the Service at the termination of their probationary period of service afloat. As far as possible each officer will be allowed to choose which branch or service he will join, but this must be subject to the proviso that all alike are satisfactorily filled.

All nominations of Candidates for Naval Cadetships are made by the First Lord, with the exception of a limited number which are at the disposal of individual members of the Board and of certain Officers of the Royal Navy. A limited number of nominations are given annually to boys belonging to families resident in the Colonies. The names of Candidates are submitted to the Secretary of State by the Governments of the Colonies concerned.

A Flag Officer or a Commodore 1st Class appointed to the Chief Command of a Station, or to a separate command, and a Captain, on first appointment as such to the command of a ship

* Candidates are strongly recommended to provide themselves with the latest official regulations. Application should be made to the Secretary, Admiralty, London, S.W.

in full Commission, will be allowed to nominate one candidate provided the privilege is exercised within six months of appointment and that the candidate is not less than twelve years old when nominated, and that he is considered suitable by the interviewing Committee. Before entry he will have to pass the Qualifying Examination.

Applications for nominations should be addressed to the Assistant Private Secretary to the First Lord, and should not be made until the candidate has reached twelve years of age. The applications must be received at the Admiralty

For the March examination before the 1st January.

For the July examination before 1st May.

For the December examination before 1st October.

Every Candidate desirous of receiving a nomination from the First Lord of the Admiralty will be required to present himself before a Committee which will sit at the Admiralty for the purpose of interviewing Candidates shortly before the Qualifying Examination takes place. The fact, however, of a Candidate being invited to appear before this Committee is not to be understood as in any degree implying that he will necessarily receive a nomination. The nominations will be made three times a year, a few weeks before the date fixed for the examination of Candidates.

The Qualifying Examinations will be held in March, July and December, and the appointments will date from the 15th May, 15th September, 15th January following, respectively. Candidates will be examined only once, but parents may choose whether they will send up their sons at the earlier or later of the two occasions upon which they will be eligible for nomination, on the distinct understanding that if nominated they are entered for the Qualifying Examination immediately succeeding the interview. Candidates for examination in—

March must be not less than 12 years and 8 months or more			
	than 13 years of age on the following ..		
July	do.	do.	.. 15 May
			.. 15 Sept.
Dec.	do.	do.	.. 15 Jan.

Every Candidate must be in good health, and free from any physical defect of body, impediment of speech, defect of sight or hearing, and also from any predisposition to constitutional or hereditary disease or weakness of any kind, and in all respects well developed and active in proportion to his age. Before undergoing

the literary examination he will be required to pass the medical examination according to the prescribed regulations, and must be found physically fit for the Navy. Full normal vision is required.

The Qualifying Examination will be in the following subjects:—

1. English (including writing from dictation, simple composition and reproduction of the gist of a short passage twice read aloud to the Candidates).
2. History and Geography, with special reference to the British Empire.
3. Arithmetic and Algebra (two-thirds of the questions in this paper will be on Arithmetic. *The use of Algebraic symbols and processes will be allowed*).

Arithmetic.—The simple and compound rules, avoirdupois weight, linear and square and cubic measures, the elementary mensuration of rectangular surfaces and volumes, measures of capacity (pints, quarts, gallons), the metric system (the metre, gramme and litre, with their multiples and sub-multiples), money (including the relation-ship of the cent. to the dollar, and the centime to the franc), reduction, simple proportion, factors, the addition, subtraction, multiplication, division and simplification of vulgar fractions, and non-recurring decimal fractions.

Algebra. The meaning of algebraical symbols, substitution of values, easy identities, factors, fractions, equations of the first degree, including simultaneous equations, verification of the solution of equations, problems leading to simple equations.

4. Geometry. The paper will consist of questions both on Practical and on Theoretical Geometry.

All Candidates must be provided with a ruler graduated in inches and tenths and also in centimetres and millimetres, a small set square, a protractor, pencil compasses, and a hard pencil.

Any proof of a proposition will be accepted which appears to the Examiner to form part of a systematic treatment of the subject.

Proofs of the validity of constructions will not as a rule be expected, but they may be asked for.

Practical Geometry. Bisection of angles and straight lines, construction of perpendiculars to straight lines, construction of triangles with three parts given, formation of such angles as 60° , 30° , 45° , $22\frac{1}{2}^\circ$ without the use of the protractor, construction of angles equal to a given angle, construction of squares, rectangles and parallelograms, construction of parallels to a given straight line, division of straight lines into a number of equal parts.

Theoretical Geometry. Definitions of the principal terms used either in Practical or in Theoretical Geometry within the limits of the syllabus. The substance of the theorems contained in Euclid, Book I, Propositions 4-6, 8, 13-16, 18, 19, 26-30, 32-34. Very simple deductions from these theorems. The order in which the theorems are stated is not imposed as the sequence of their treatment.

5. French or German, with oral examination, to which importance will be attached.
6. Latin (easy passages for translation from Latin into English and from English into Latin, and simple grammatical questions).

PAYMENTS.—For all Cadets entered under these regulations the payment will be at the rate of £75 per annum for the period under training, to be paid every term in advance to the Cashier of the Bank of England on receipt of claim from the Accountant-General of the Navy. But the Lords Commissioners of the Admiralty reserve the power of selecting from among the Cadets entered at each Examination a limited number, being sons of Officers of the Navy, Army, or Marines, or of Civil Officers under the Board of Admiralty, with respect to whom the annual payment will be £40 only. In this selection their Lordships will have regard solely to the pecuniary circumstances of the Cadet.

Applications for the Reduced Scale must be received at the Admiralty not later than 1st January, 1st May, and 1st September.

Parents or guardians are further required to make a private allowance of £50 per annum to Cadets from the expiration of their period of training until they reach the rank of Acting Sub-Lieutenant.

In addition to the annual payments mentioned in the foregoing paragraph, the parent or guardian is charged with the cost

of outfit and the personal expenses incurred by the Cadet for washing, repairing boots and clothes, pocket-money, instruments, school books, sports, etc.

The average cost of outfit is £40, and the personal expenses, as above, are about £8 per term.

The list of successful candidates will be published in alphabetical order.

The period of training will be four years and eight months (*i.e.*, two years at the Royal Naval College, Osborne, two years at the Royal Naval College, Dartmouth, and two terms in the Training Cruiser); there will be three terms in each year. The first term of each year will be approximately from 15th January to 15th April, the second from 7th May to 7th August, and the third from 15th September to 15th December.

The vacations will be four weeks at Christmas, three weeks at Easter, and six weeks at Midsummer.

It is to be distinctly understood that the period of training is a time of probation, and the parent or guardian of every Cadet will be required to sign a declaration on the admission of the Cadet, to the effect that he shall be immediately withdrawn on the receipt of an official request for his withdrawal. The Lords Commissioners of the Admiralty reserve to themselves full discretion to request the withdrawal of any Cadet from the Royal Naval College, if after a sufficient trial he is in their opinion for any reason unsuitable for the Naval Service. Professor Ewing states that something like 8 or 10 per cent. of the boys are withdrawn in this way. This discretion will, as a rule, be exercised at the end of the first year, but the proficiency and progress of the Cadets will be periodically determined, and they may be required, if necessary, to withdraw at a later stage.

Cadets who fail to attain a certain standard, or who, for any reason, are considered unsuitable for the Naval Service, may be required to withdraw at any time.

This rule will apply to those who do not show an aptitude for Naval life, as well as to those who make insufficient progress, or whose constitution is weak, although no disease may have developed.

NOTE.—We are officially informed (14th Jan., 1908) that a fresh rule will shortly be added to the effect that, if parents withdraw their sons from Osborne or Dartmouth for private reasons, and not at the wish of the Admiralty, they will be expected to make an additional contribution to the cost of their sons' education, amounting to a sum calculated at the rate of £75 a year.

If a candidate is successful he proceeds to Osborne Naval College for the first two years, then to the Royal Naval College, Dartmouth, for a further two years.

Three nominations to Cadetships in the Royal Naval College, Dartmouth, are granted annually to H.M.S. "Conway." For full information on this important point see the chapter on the "Mercantile Marine."

Osborne and Dartmouth—Professor Ewing, Director of Naval Education, thus explains the course:—
"During these four years the boy receives a broad and liberal education in the subjects of a modern side at a public school, along with a much greater amount of practical science and engineering than any public school gives or could give. Each of the colleges is furnished with a large workshop in which the engineering training is given by naval officers of the engineering branch. The time spent in the workshops, together with that spent on theoretical subjects directly connected with engineering, makes up one half of the Cadet's working time. The Cadet's life is a very strenuous one, but great care is taken to guard against overstrain. A highly important feature of the colleges is their naval character; not only does the curriculum include a certain amount of teaching in seamanship and navigation, but the boys are under naval discipline and are breathing a naval atmosphere throughout their course. There are many difficulties in combining organisation under a naval captain with the proper action of a large staff of

civilian masters, under a responsible headmaster, but experience has shown that the difficulties are not unsurmountable.

After Dartmouth.—From Dartmouth the boys will be drafted to a training cruiser for a period of six or eight months. There they will continue their studies in certain selected subjects, especially in navigation, seamanship, and steam engineering. They will then pass out as midshipmen. Under the new scheme the midshipmen will no longer be under a naval instructor at sea. They will give their whole time to acquiring knowledge of professional subjects under the instructions of the officers of the ship. It is intended that an additional lieutenant shall be borne whose duty it will be to instruct them in seamanship and generally to supervise their training in other subjects. On completing their three years' service as midshipmen, they will pass examinations much as at present in seamanship, navigation, steam engineering, and general subjects. Those who pass well and thereby show themselves most fit for subsequent selection as specialists in the more scientific branches will then have a course of training in applied science for fully six months, corresponding generally to what is now known as Part II course at Greenwich. All the officers will also have short shore courses in gunnery, torpedo, and pilotage as at present.

PROFESSOR EWING'S EXPLANATORY DIAGRAM.

OSBORNE. 2 YRS.

DARTMOUTH. 2 YRS.

PASSING-OUT EXAMⁿ — TRAINING IN CRUISER. $\frac{2}{3}$ YR.

SERVICE AS
MIDSHIPMAN. 3 YRS.

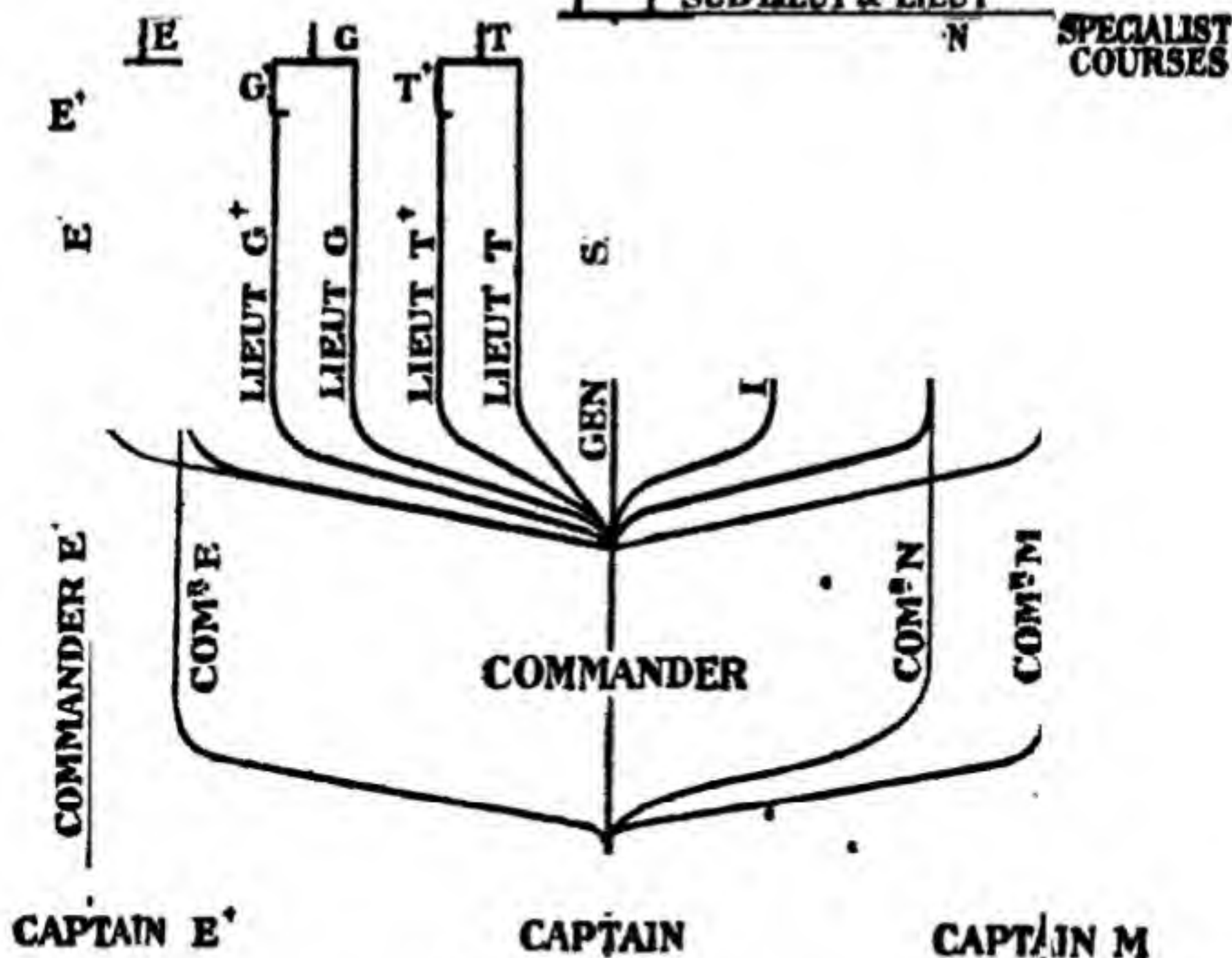
EXAMⁿ IN SEAMANSHIP & PART I

GUNNERY TORPEDO & } $\frac{2}{3}$ YR.
PILOTAGE COURSES

COURSE FOR PART II. $\frac{2}{3}$ YR.

SERVICE AS
SUB-LIEUT & LIEUT

SPECIALIST
COURSES



† Advanced course.

Time of choice between general service and specialisation—Then, having passed all their examinations for lieutenant, they will go to sea, and after a period of sea-service of a year to a year and a half, selection for specialist training will take place. It is estimated that about two-thirds of the officers will, at this stage, take up one or other of the various specialist branches, the other third remaining general service lieutenants. The specialist branches are engineering, gunnery, torpedo, navigation, and the Marine or Military branch distinguished by the letters E.G.T.N. and M. The diagram indicates the separation into the various specialist lines, and also the bifurcation which will occur later between the ordinary specialist and the more advanced scientific specialist who takes a more extended course of training; thus the officers selected to become lieutenants E. will all have a course of shore training extending over one year, qualifying them to be classed as lieutenant E., while those who show the greatest promise will have a further course, of a highly advanced character, extending over two years more, and having taken it, will be distinguished as lieutenant E. Similarly a course of one year will qualify lieutenants G. and T. and the best of these will become lieutenants G. or T. after an advanced course of one year or more, the arrangements in this respect remaining as at present. Lieutenants N. will be trained much as they are now. The Marine specialist, or lieutenant M., would receive a short training of 18 months devoted entirely to professional subjects. On obtaining the rank of commander most of the specialists will revert to the non-specialist line and proceed in it to executive command; but in two

branches—namely, the Engineers and Marines—a certain proportion of the officers will remain specialists after reaching command rank. Of these, again, a certain proportion will still remain specialists after reaching the rank of captain, but those who do so will necessarily forego the chance of obtaining the command of fleets or squadrons. They will remain specialists on reaching flag rank, and will be eligible for appointment to important positions at the Admiralty, in the dockyard, and in the corps of Royal Marines. It is expected that most of the officers who receive the high engineering training qualifying for lieutenant E. will remain specialists to the end in view of the important technical positions which would be open to them for which they will be particularly fitted by training, taste, and experience. Various alternatives before each officer are shown by means of the diagram. Taking the fleet of 1908 as a basis of calculation, it appears probable that the number of lieutenants who will be required annually to specialise in engineering will be roughly, about 54; in gunnery, 16; in torpedo, 12; in navigation, 12; marine officers, 15. The remainder will be general service lieutenants.

For the higher scientific training which the officers will undergo as sub-lieutenants and lieutenants, and also for the training of naval constructors, a technical college is essential, with all the paraphernalia of laboratories which such training involves. For this purpose the college at Greenwich is now well equipped, but, in view of the reduced number who will study there, it is difficult to say what the future may have in store for Greenwich. In any case, at Greenwich

or elsewhere, a highly equipped technical college is essential for the purpose of carrying out under proper conditions the scientific training involved in the Part II Course, through which at least 60 per cent. of the officers should pass, and also the higher scientific and technical courses for the engineering, gunnery, and torpedo lieutenants as well as the course for naval constructors. This provision is required for the advanced specialists, who, though they form a numerically small part of the scheme, are an immensely important part of it, and may be regarded as essential to its success. Fears have been expressed in some quarters that lieutenants may not be willing to volunteer in sufficient numbers for the engineering branch. What is important to recognise in this connection is that in the future engineering will stand in the same place with the gunnery and torpedo specialities, as work for the best intellects of the Navy, and as giving augmented chances of rapid promotion. Compared with the general service lieutenant, the specialist will be at an advantage both as to the probability of promotion coming at all and as to its coming earlier. With regard to the few specialists who confine themselves in the senior ranks to their own speciality, among their compensations or foregoing chances of command are the greater probability of promotion and the greater certainty of continued employment and of employment on shore. The scheme carries out reforms which are generally felt to be imperative.

While making ample provisions for particular requirements, it will tend to weld the Service into a homogeneous whole. It will make naval officers, to

a far greater extent than formerly, one in sentiment, one in tradition, one in aspiration. It provides that, in the stress of war, every officer shall be a fighting unit. It provides that every officer shall be a sailor, and that every officer shall have the practical knowledge of mechanism which the altered character of ships and the altered conditions of naval warfare has made so necessary. It gets rid of the presence in the ship of any element which does not admit of complete fusion with the main body. As regards the Marines, it has been said that the new scheme will endanger the future of the corps. May one not say that it removes a danger? So long as the Marines constitute as separate a body as they have hitherto done, they are surely in greater jeopardy as a permanent element of our naval system than when they came under conditions which led to a closer unification of interest and a more effective combination of effort. To senior Marine officers in the past the Navy has had very little to offer. The Marine lieutenant of the future will work with a great consciousness of being useful, in closer community of sentiment with his brother officers, and with a better confidence as to what his profession has in store for him."

In an Admiralty Circular, dated April 6th, 1906, the new arrangement is defined as follows:—

"After passing for the rank of lieutenant, they may be required to serve as general service officers or in one of the special branches, undertaking either engineering, gunnery, torpedo, navigation, or marine duty." Thus, there will be no separate permanent group of lieutenants, designated as Lieutenant (E) or

Lieutenant (M), but the engineering and marine duties will be undertaken temporarily by officers drawn from the general list of lieutenants, as is the case with the navigating and gunnery departments at present.

Estimate of Expenses.

The expenses of outfit on going to sea and again as sub-lieutenant may be put down at £70 each. The total cost of a cadet's career under the new regulations will then work out as follows:—

Outfit on entry	... ..	£40
Four years and eight months at		
£100, say	... ..	470
Outfit on going to sea	... ..	70
Allowance for five years at £50		250
Outfit as sub-lieutenant	... ..	70
		<hr/>
		£900

Prospects and Pay.—Up to the rank of Lieutenant promotion is by seniority, afterwards by selection.

Annual Pay of Effective Officers (exclusive of Allowance to Flag Officers).—Admiral of the Fleet, £2,190. Admiral, £1,825. Vice-Admiral, £1,460. Rear-Admiral, £1,095. Commodore (1st class), £1,095. Captain of the Fleet, £1,095. Captain, first 65, £602; second 65, £502; remainder, £411. Staff Captain, £511.

Commander	...	...	...	...	£365	0	0
Additional, when in command of Sea-going Ship or Tender	...	...			68	8	9
Additional, when in command of Harbour Ship or Tender	...	...			45	12	6
Additional for Navigating Duties, from £73 to					91	5	0
Lieutenant in Command—							
Under 8 years' Seniority	...	...			200	15	0
Afterwards, rising to	...	...			310	5	0
Additional, when in command of any Sea-going Ship or Tender	...				68	8	9
Additional, when in command of any Harbour Service Tender	...	...			45	12	6
Lieutenant—							
Under 8 years' Seniority	...	...			182	10	0
Afterwards, rising to	...	...			292	0	0
Additional, as Senior of a Ship, from					27	7	6
to					45	12	6
Additional, for Gunnery or Torpedo Duties	...	...	...	from	27	7	6
to					73	0	0
Additional, for Navigating Duties from					45	12	6
to					73	0	0
Sub-Lieutenant	...	...	...	...	91	5	0
Additional, for Navigating Duties	...				45	12	6
„ when in command of a Ship or Torpedo Boat					36	10	0
Midshipman	...	...	...	...	31	18	9
Naval Cadet	...	..	...	...	18	5	0

Engineer Rear-Admiral, £1,095. Engineer Captain, £638 to £730. Engineer Commander, £438 to £602. Engineer Lieutenant, £182 to £365 (or £264 to £301). Engineer Sub-Lieutenant, £137.

N.B.—These amounts are given in whole figures.

RETIRED PAY.

Rank.	Age of Compulsory Retirement.	Retired Pay.
Lieutenant ...	45	£300
Commander ...	50	£400
Captain ...	55	£500

The retiring pay of naval officers is on a liberal scale, and contrasts favourably with that of the Army. If the worst comes to the worst, an officer in the Navy can look forward at 45 to a lieutenant's pension of £300 per annum, and this pension comes at an age when he is not too old to find some congenial employment ashore.

Before we leave the Navy, we must deal with three careers of a non-combative character, viz., Naval Clerkships, Surgeons in the Fleet, and Naval Chaplains. Other less important posts connected with the Navy will be considered in our chapter on the "Civil Service."

Naval Clerkships. These are very desirable posts, and offer a well-educated, determined youth every chance of rising to an important position.

N.B.—Only one examination is held annually.

1. Appointments to Assistant Clerkships will be made by limited competition, with the following exception, viz.:—

One candidate will be nominated annually, who will be required to obtain such an aggregate of marks in Class I as may satisfy the Civil Service Commissioners.

2. This candidate will be selected by the Board of Admiralty from sons of officers of the Navy or Royal Marines who have been killed in action or who have been lost at sea on active service, or killed on duty, or who have died of wounds received in action or injuries received on duty within six months from the date of such action or injury, or who have performed long and meritorious service.

Except as regards exemption from the competitive examination, the candidate will be subject in all respects to these regulations.

All other candidates will be nominated by the First-Lord of the Admiralty.

Applications to have the names of candidates placed on the list should be addressed to the Assistant Private Secretary of the First Lord of the Admiralty, and should not be made until the candidate has reached the age of sixteen.

3. An examination for Assistant Clerkships will be held about June in each year under the direction of the Civil Service Commissioners (address—Burlington Gardens, W.)

Candidates will be required to pay a fee of £1, to the Civil Service Commissioners, before the educational examination.

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The Civil Service Commissioners will deal with all questions connected with such Examination, and will announce the results.

4. No candidate will be eligible for examination in June who is under 17 or over 18 years of age on the 15th July following the examination.

As proof of the candidate's eligibility in point of age, a Registrar's certificate of birth, or a declaration thereof made before a magistrate, will be called for. A certificate of baptism alone will not be accepted.

5. The number of Assistant Clerks to be entered at such examination will be regulated by the requirements of the Service.

6. A candidate must be of pure European descent and the son either—

- (1) of natural-born British subjects, or
- (2) of parents naturalised in the United Kingdom.

If any doubt arises upon the question the burden of clear proof that he is qualified will rest upon the candidate himself.

7. Candidates who may be successful at the educational examination will be required to pass the medical examination, according to the prescribed regulations, before the Medical Director-General of the Navy, and must be found physically fit for the Royal Navy.

They must be in good health and free from any physical defect of body, impediment of speech, defect of sight or hearing, and also from any predisposition to constitutional or hereditary disease or weakness of

any kind, and in all respects well developed and active in proportion to their age. The cases of short-sighted candidates, in other respects fit, will be specially considered.

The decision arrived at by the Medical Officer will be considered final.

8. Candidates if nominated will be required to produce (1) certificates of good conduct from the masters of any schools at which they may have been educated during the two previous years, or, if educated at home, from their tutor or the clergyman of the parish in which they reside; (2) a certificate of ability to swim.

9. Candidates will be examined in the following subjects in Class I, and must obtain such an aggregate of marks as will satisfy the Civil Service Commissioners. They will also be permitted to present themselves for examination in two other subjects under Class II:—

CLASS I.				Marks.
1. Arithmetic, including Mensuration	...	...	...	500
2. Mathematics (Algebra, Geometry, and Trigonometry)				600
3. English, including Handwriting, Spelling, Dictation, Composition, Précis and Shorthand, special attention being attached to Composition and Shorthand	...	...	...	700
4. Geography and English History, with special reference to the period since 1485	•	...	...	400
5. French or German, special attention being attached to the oral examination	...	...	...	600

N.B.—Mathematics will include the following, practically treated:—Triangle, the number and nature of the conditions that determine it, simple relations among its parts. Parallels, areas, expression for the area of a parallelogram and of a triangle in terms of base and height; making triangle or square equal to any given

figure; volumes easily deduced. Arithmetical definitions of ratio; properties of similar figures. Sine, cosine, and tangent of angles less than 180° . Circle, simple relations, angle properties, tangents and rectangle properties. Algebraic formulas, graphs, equations, indices, logarithms, in connection with the above and other problems. Theorem of Pythagoras, and its extension to any triangle. The formulas $a^2 = b^2 + c^2 - 2bc \cos A$ and $\sin A/a = \sin B/b = \sin C/c$ and their application to the solution of triangles. Expression of $\sin 2A$ and $\cos 2A$ in terms of $\sin A$ and $\cos A$.

CLASS II.

Two of the following subjects:—

(a) Latin	..	...	...	...	...	...	600
(b) Greek	..	...	...	...	...	...	600
(c) Elementary Science, including simple questions in Mechanics, Heat, Properties of Matter, and the Chemistry of the commoner inorganic substances, with practical tests	...	...	...	...	...	...	600
(d) A second modern language*	...	...	...	...	...	...	600

10. The following are the rates of pay given to the Accountant Officers in the Navy:—

Assistant Clerks, 2s. 6d. per day; £45 12s. 6d. per annum. Clerks, 4s. per day; £73 per annum. Assistant Paymasters, from 5s. to 11s. 6d. per day; £91 5s. to £209 17s. 6d. per annum (according to length of service). Paymasters, Staff Paymasters, and Fleet Paymasters, from 14s. to £1 13s. per day; £255 10s. to £602 5s. per annum (according to length of service). Paymasters-in-Chief, £1 18s. per day; £693 10s. per annum.

The parents or guardians of Assistant Clerks are required to pay half-yearly in advance to the Accountant General, to be held to their credit, £20 a year for each Assistant Clerk from the date of entry into the Service until he is rated Clerk.

* A Candidate who wishes to be examined in any modern language, other than French or German, under Class II (d) must obtain the written consent of the Admiralty at the time of his nomination.

An Assistant Clerk is rated Clerk after a year's service provided he can pass the necessary examination.

Medical Officers in the Navy.—These posts are obtained by competitive examination. Age 21—28. Fee, £1. A candidate must be registered under the Medical Act in force as qualified to practice medicine and Surgery in Great Britain and Ireland. His physical fitness will be determined by a Medical Board.

He must sign a declaration, stating age and date of birth, purity of European descent, freedom from disease, willingness to serve at home or abroad. Certificates of Medical registration, character, and birth must accompany the declaration, which must be returned to the Director-General, Medical Department, Admiralty, S.W.

Subjects of Examination.—Compulsory:

Medicine, &c.—1,200 marks. Surgery, &c.—1,200 marks.

Voluntary: Natural Science—600 marks.
French (300) and German (300)—600 marks.

In Natural Science the subjects are as follows, and a candidate cannot offer more than two:—Chemistry (300); Physiology (300); Zoology (300); Botany (300); Geology and Physical Geography (300). The importance of French and German is strongly pressed upon candidates. At least 400 marks, *i.e.*, one-third of total, must be obtained in the voluntary subjects, else the knowledge of them is not considered of value.

Successful candidates will receive Commissions as Surgeons in the Royal Navy, and will undergo a course of practical instruction in Naval Hygiene, &c., at Haslar Hospital.

Rates of Pay. Surgeon, £255 10s. to £310 5s.

Staff-Surgeon, £365 to £438.

Fleet-Surgeon, £492 15s. to £657.

The scale of retired pay on compulsory retirement after reaching age limit is liberal. Further, the scale of gratuities upon *voluntary* retirement after service for four years and upwards is very attractive. Many a young doctor has thus had the advantage of service in the Navy for a few years, and has then retired with a gratuity that has enabled him to purchase a good practice ashore. The scale of gratuities is as follows:—

After four years' full-pay service, £500; after eight years, £1,000, after twelve years, £1,500; after sixteen years, £2,250.

Chaplains in the Navy. The motives that would attract an earnest, vigorous young Clergyman to seek service in the Army operate with equal force in the case of the Navy. There is the roving, adventurous life of the sea, with its quickly-changing scenes and incidents, the daily contact with men who are ready to dare and die; like his brother-chaplain in the Army he will need qualities of manliness and tact and grace, if his influence is to be for good in the close intimacy of life on board a man-of-war.

A candidate for a Chaplaincy in the Royal Navy must be in Priest's Orders, not over 35, must produce

testimonials from his Bishop, and must pass the examination of the Medical Director-General.

A Chaplain's pay starts at £219 and rises to £401 10s.

Chaplains must retire at 60, and may retire at 55. Retired pay is on the following scale:—

After 10 years' service	...	£50 per annum.
„ 15 „ „	...	£100 „
„ 20 „ „	...	£250 to £450 per annum.

There is also a pension for Widows of £50 to £80 a year, with a further allowance for each son under 18 and each daughter under 21.

We are informed that, owing to the conditions of the New Scheme for the training of Naval Cadets, Naval Instructors will not be appointed in the future.

Select list of Preparatory Schools for the Royal Navy, of which fuller information is found in Appendices I, IV, and VI:—

H.M.S. "Conway."

Plymouth College (for Naval Clerkships).

Corchester, Corbridge-on-Tyne.

Northcott, Burgh Heath, Surrey.

Naval Outfitters recommended:—

Messrs. Gieve, Matthews, and Seagrove, Portsmouth. See Appendix VIII.

III.—THE MERCANTILE MARINE.

As the safety of Great Britain ultimately depends upon the Navy, so do her food supply and trade depend upon her splendid Mercantile Marine. To a boy of thoroughly strong constitution, who can stand the rough and tumble of a sailor's life, the Merchant Service offers many opportunities, and a steady, determined lad who loves his work, and has sufficient intelligence to pass the qualifying examinations, is fairly certain of a good position.

Parents will do well to remember that a sound physique is a matter of prime importance, and that boys who are colour-blind cannot become officers in the Mercantile Marine. The best way for a lad to enter the Merchant Service is through one of the School Training Ships, either the "*Conway*," Rock Ferry, Birkenhead, or the "*Worcester*," Greenhithe, Kent, where, for two years, he passes through an educational and nautical training, which is of the greatest possible advantage. The limits of age for admission are for the "*Conway*," 12 to 16, and, in certain cases, 17, and for the "*Worcester*," 11 to 15½.

The fees on the "*Conway*" and on the "*Worcester*" are £68 5s. per annum, which include uniform, medical attendance, washing, and use of books and stationery. A charge of £7 more on the "*Conway*" is made per term for those who join the Royal Naval

Class: Sons of nautical members of the Mercantile Marine Service Association, and Officers of the Royal Navy, are admitted to the "Conway" at special rates.

Courses Open.—Two courses are open to a lad on the completion of his training, viz., to serve an apprenticeship of three years in a sailing ship, or the same period in steam as a midshipman.

If a lad has not been trained on the "Conway" or "Worcester," his only course is to become an apprentice on board a sailing ship.

(1) *On a Sailing Ship.*—Some shipowners accept apprentices without a premium, but it is usual to ask a premium, from £25 to £40, which is returned, in whole or in part, in wages during apprenticeship. The length of the apprenticeship is four years.

When a lad has entered the Service he can hope to move upward as follows:—

After four years' apprenticeship, if he is 17 years old, he can try to pass the Board of Trade Examination for his certificate as Second Mate. N.B.—Two years' training on the "Conway" or "Worcester" will count as one of the four years.

After five years at sea, if he is 19, he can try for his certificate as First Mate.

After six years at sea, if he is 21, he can try for his certificate as Master.

Liverpool shipowners have set on foot a scheme for the training of boys who are desirous of obtaining

executive rank in the Mercantile Marine. The great steamship owners have recognised that this is a matter demanding their urgent attention.

The idea is to obtain a certain number of ship-rigged vessels of some 2,000 tons register capable of accommodating some 75 cadets each.

It is significant to note that the vessels will be sailing ships, the opinion being that boys trained under sail make the better officers.

The proposition is that the course be for three years and that the fees be £50 per annum, whilst a condition is set up that the boys shall all have previously had a good education.

(2) *On a Steamship.*—In the case of steamship lines, which take Midshipmen, the terms vary; *e.g.*, the Clan Line requires a deposit of £50, returnable with 4 per cent. simple interest on termination of agreement, and pay in wages 30s. a month for the first year, 40s. for the second, and 50s. for the third year. Messrs. T. & J. Harrison require a deposit of £20, and pay in wages £12, £18, and £24 for the first, second, and third years respectively. The Royden Line requires no deposit or premium and pays no wages, while several other lines pay a small wage.

It must here be stated that the great steamship companies, *e.g.*, the Cunard, the White Star, the Peninsular and Oriental, &c., lay down stringent regulations in the case of all Officers. For instance, the Cunard Company requires all Officers, before they can be admitted into its service, to hold a Master's Certificate; before being given the position of Chief

Officer, they must have held command, possess an Extra Master's Certificate, or have served twelve months in H.M. Navy as a Royal Naval Reserve Officer.

Within the past year or two several large steamship Companies have decided to give a preference, as the case may be, either to "Conway" or "Worcester" boys as Cadets, Midshipmen, or Apprentices; amongst them are the P. and O., The Bucknall Steamship Co., The Asiatic Steam Navigation Co., The Ellerman Line, The Royal Mail Steam Packet Co., The British India Steam Navigation Co., Messrs. Elder, Dempster & Co., and both the Cunard Line and the White Star Line, with their Associated Lines.

In addition to the main advantages afforded by the Training Ships in supplying a good educational and nautical training—which is imperative for the responsible posts on the great ocean liners—there are other advantages which are worth a parent's attention.

Advantages attaching both to the "Conway" and "Worcester."

- (a) The King's Gold Medals. His Most Gracious Majesty, the King, has been pleased to continue to grant the Gold Medals awarded annually to the best Cadet of the "Conway" and of the "Worcester" by Her late Majesty Queen Victoria. The medal is awarded to the boy on each ship who shows the qualities likely to make the finest sailor; "these consist of cheerful submission to superiors,

self-respect and independence of character, kindness and protection to the weak, readiness to forgive offence, desire to conciliate the differences of others, and, above all, fearless devotion to duty and unflinching truthfulness ”

The following Regulation will, by His Majesty's command, be observed in awarding the prize :—

“ The Medal will be open to boys who have been one year
“ on board the ship, and have received not less than half the
“ total number of marks at the previous Quarterly Examination.
“ The Commander, after conferring with the Head Master, shall
“ select not less than three nor more than five of the boys whom
“ he considers to possess the qualities for which the prize is
“ given. He shall then submit these names to the boys who
“ have been assembled for the purpose in the School, and each
“ boy who has been on board six months (one session) previously
“ to the time of distribution, shall then and there vote for one
“ of the boys so selected.

“ The boy who obtains the highest number of votes shall
“ receive the medal.”

(b) The Lords of the Admiralty present annually to Cadets on both ships several Commissions as Midshipmen in the Royal Naval Reserve. Cadets must be between 16 and 18 years of age at the date of appointment, must be British subjects, possess a first-class certificate (covering study and character) and be nominated by the Committee of their respective ships to the Admiralty.

(c) Appointments in the Bengal Pilot Service —
The Secretary of State for India in Council selects candidates recommended by the Committee of the “Conway” or “Worcester” as Leadsman Apprentices for the Bengal

Pilot Service. The candidates must not be less than 18 and not more than 22 years of age and must produce a "Conway" or "Worcester" Board of Trade Certificate, as well as a Board of Trade Certificate of competency as 2nd Mate, and must have served at sea not less than three years in a square-rigged sailing vessel of over 200 tons. Each accepted candidate will receive a second-class passage to Calcutta and an allowance of £20 for outfit.

On arriving at Calcutta and reporting himself to the Port Officer he will receive Rs. 100 a month. The Rupee may be reckoned as 1s. 4d.

The following are the pays of the Bengal Pilot Service:—

Leadsman Apprentice	...	100 Rs. a Month.
2nd Mate Leadsman	...	125 "
1st Mate Leadsman passed as		
Mate Pilot	... ..	150 "
Mate	... ..	400 "
Master	... ..	700 "
Branch Pilot	... ..	1000 "

Advantages attaching to the "Conway."

(a) Cadetships for the Royal Naval College, Dartmouth. In 1907 the following important regulations came into force:—

1. Three nominations to Cadetships in the Royal Naval College, Dartmouth, will be granted annually to the "Conway" Training Ship of the Mercantile Marine.

2. Shortly before the end of each term, the Committee of the "Conway" may nominate a Cadet from their Training Ship for

admission to the College as a Cadet of the Royal Navy, subject to his passing a qualifying examination and satisfying the conditions specified below.

Each Cadet so nominated will be required to pass an examination showing that he has reached the same general standard of training as is reached by Naval Cadets on leaving the Royal Naval College, Osborne.

3. The Examination will be conducted, near the end of each term, at the Royal Naval College, Osborne, and will include tests in practical knowledge of the use of tools and workshop processes, as well as papers on the subjects dealt with in the Osborne curriculum.

The Candidate, if successful, will be admitted to the Royal Naval College, Dartmouth, from the beginning of the term in January, May, or September following the examination.

4. Each Candidate must possess the following qualifications:—

- (a) He must be of very good character and conduct, and in all respects fit for entry into H.M. Navy.
- (b) He must not be less than 14 years 8 months, nor more than 15 years old on the 15th January, 15th May, or 15th September following the examination.
- (c) He must have served in the Training Ship two years, i.e., six terms, there being three terms a year.
- (d) He must have spent not less than one-fourth (or the equivalent of six months) of his two years' service in practical mechanical work under conditions satisfactory to the Admiralty.
- (e) Before attending the qualifying examination, he must pass the medical examination for the Navy, according to the prescribed regulations.

5. The following Certificates must be forwarded at the time the Candidate is nominated:—

- (a) Certificate of Birth.
- (b) „ Conduct.
- (c) „ Ability to Swim.
- (d) „ Time served in Training Ship.
- (e) „ Time spent in practical mechanical work, with particulars of training.

The name and address of the parent or guardian must also be supplied.

6. The regulations as to the provision by parents or guardians of the outfit, the annual contribution of £75 per annum while the Cadet is at Dartmouth, and the private allowance, after passing out, will be the same as those with respect to other Naval Cadets.

7. Cadets entering under these regulations will be subject in all respects to the same discipline and conditions of service as other Cadets during their period of training at the Royal Naval College, Dartmouth, and will be liable to removal for the same causes.

On passing out, they will be treated in the same manner as the other Cadets, and will rank according to the time gained and their position on the list.

(b) **The King's Prize.**—His Majesty the King, with a view further to encourage boys of the "Conway" School to qualify themselves for the Cadetships in the Navy, granted by the Admiralty, has been pleased to declare his intention of giving a prize annually to the boys of the "Conway" who compete for Cadetships in His Majesty's Service. The Prize will consist of a Binocular Glass, with a suitable inscription, and a sum of £35 towards the expense of the outfit of the boy. It will be open to all boys passing into the Royal Navy, and shall be awarded to the boy who passes highest in the competition during the year.

Advantages attaching to the "Worcester."

Although the "Worcester" does not undertake to train boys for Cadetships in the Royal Navy, yet it offers unique advantages in connection with some of the great Steam Navigation Companies.

(a) The P. and O. Company are prepared to facilitate the entry of a limited number of youths into their sea service as

Executive Officers by passing them through a preliminary training in the "Worcester" on the following favourable conditions:—

The Company will, in the case of Candidates who may be selected under this arrangement, contribute $\frac{1}{2}$ moiety, equal to 32½ guineas per annum, of the "Worcester" fees, during a period not exceeding three years.

The Cadets thus appointed will, subsequent to their training on board the "Worcester" and on approval, pass into the Company's ships as Cadets or Sub-Officers (without premium), from which grade they will be promoted to the rank of Junior Officers as soon as they are found to be eligible.

Or the Company may, at their option, pay half the premium for a year or two's training in Sailing Vessels after the Cadets have been educated on board the "Worcester" for a period, approximately, of two years.

Candidates must not be under 15 years of age, and must pass Preliminary Examinations to show that they are, for their age, sufficiently instructed and in perfect health.

Form of application may be obtained by addressing

THE SECRETARY,

P. & O. COMPANY,

122 Leadenhall Street, London, E.C.

- (b) The Chairman of the Royal Mail Steam Packet Company has inaugurated a new departure for the training of eligible youths as officers for their fleet. It is proposed to take a limited number of boys from the "Worcester" as Cadets for three years. No premium is to be charged, and an allowance of £30, towards the initial cost of uniform, and also a further allowance of £20 per annum towards the expenses, will be made. On completion of two years in the Company's service the Cadets may be promoted to supernumerary officers.

Pay in the Mercantile Marine.—It has been difficult to state the range of pay because it differs largely according to the particular line of steamers or sailing ships, and according to the trade in which

the line is engaged. By the courtesy of the Superintendent of Marine of the Port of Liverpool, we are able to give the range of pay in that important Port, which may be taken as representative:—

		Pay per Month		
Sailing Ships—	2nd Mate	from £3 0	to £4	
	1st Mate	„ 5 0	„ 8	
	Captain	„ 12 10	„ 20	
Steam Ships—	2nd Officer	„ 5 0	„ 14	
	1st Officer	„ 8 0	„ 16	
	Captain	„ 12 10	„ 30	

The Commander of a Liner of one of the large Companies receives from £700 to £800 a year, but these posts are, of course, the plums of the profession.

Capable officers can often, on retiring from the sea, obtain good posts as Harbour Masters, Lloyd's Agents, and Superintendents of Marine.

For information about H.M.S. "Worcester" and H.M.S. "Conway" see Appendix I.

IV.—MEDICINE, &c.

i.—Physicians and Surgeons.

Before deciding on the Medical Profession as the future career for a son, it would be well for the parent to consider the points for and against such a choice.

In the first place, it must be remembered that the time taken by a candidate to fully qualify for his profession cannot be less than five years, and that, even after this period of probation is at an end, if the young doctor wishes to attain ultimately a good position, he will probably spend a year or two more in some comparatively unremunerative public appointment for the purpose of widening his sphere of experience and acquiring a more thorough knowledge of his profession. It will thus be seen that the selection of this career for a youth often demands considerable self-sacrifice on the part of his parents, and should be made only after careful deliberation.

On the other hand, it must be recollected that this, of all the learned professions, is perhaps the one which offers the surest ultimate reward to energy and perseverance. It is not at the present time so hopelessly overstocked as some of the others, recent statistics tending to prove that the supply of candidates for medical qualifications should not prove to be in excess of the probable future demand for

doctors. This career seems, then, to offer a certain, if somewhat slow, reward to the youth possessed of good average abilities and a fair supply of pluck and tenacity of purpose.

Qualifications.—The work of a Medical man is of such grave importance and makes such severe demands upon his energies, physical and mental, that much consideration is required before recommending the profession to the average boy as a suitable vocation. It is, moreover, difficult to say in most cases whether a given boy is likely to develop the many qualities requisite in the doctor—skill, readiness, patience, sympathy.

There are, however, certain qualifications which the average boy often possesses, which go far to place the choice at least within the sphere of practical consideration.

The most essential of these is a thoroughly sound physical constitution, absolutely necessary in view of the strain which is likely to be imposed on it, the liability to be called to his work at any time, day or night, in all weathers and seasons, and to be required to spend many hours at a time in attendance on important cases. It is well, too, if the boy has plenty of “nerve” as distinct from “nerves ; ” but this is not of so much moment, for experience shows that the medical student who faints at his first introduction to an operation will easily overcome that natural weakness, given the necessary physical health.

The next requirement is diligence, involving carefulness and accuracy: its opposite would be obviously fatal to doctor and patient alike. The boy

must be one who will "take pains," if not in all, at least in some departments of his school work: whether or not he possesses this qualification that work should show.

The third is a taste for natural science, that is, for the careful observation of the facts of nature. This need not necessarily mean marked success in the Chemistry or Physics of the schools, though that is a good test; if a boy is really fond of some branch of natural history, or collects birds' eggs or butterflies with a really intelligent interest; he is not unlikely to make a capable medical man.

While duly bearing in mind these three important qualifications, it would be well to remember that there is no profession in which a good liberal education is of more service to its possessor than that of the Doctor, and that the more thorough the previous general instruction of the candidate has been, the more likely is he to succeed, when he comes to the period when specialization is necessary.

Examinations.—To become qualified to practice it is obligatory to have passed a Preliminary Examination by some examining body recognised by the Medical Council, and then, having attained the age of 16, at least, to go through a five years' course of training before taking the Final Examination.

The subjects for the Preliminary Examination are:—

- (1) English, including Grammar and Composition.
- (2) Latin, including Grammar, Translation from specified authors, and easy unseen Translation.

- (3) Arithmetic, Algebra, and Geometry (Euclid, Books I—III, and subjects relating thereto).
- (4) One optional subject, either Greek, a Modern Language, or Logic.

The following are the principal recognised Preliminary Examinations, a certificate in any of which will entitle a youth to be registered as a medical student. The required subjects need not be passed all at one time in the case of most of these examinations, *e.g.*, in the London Matriculation, or Senior Oxford, or Cambridge Local Examinations, but the latest syllabus of each Examination should always be consulted.

1. Oxford or Cambridge Local Examinations, either Junior (under 16) or Senior (over 16); Durham Senior Local; the examinations of the Oxford and Cambridge Schools Examination Board. To these correspond, in Scotland, the Leaving Certificate of the Scottish Education Department; In Ireland, the Middle or Senior Grade Examinations of the Intermediate Education Board of Ireland; and, in Wales, the Senior Certificate of the Central Welsh Board.

2. The Matriculation Examination at any University: of which that of London is the most important.

3. The Preliminary Examination of the College of Preceptors for Medical Students, or the ordinary first-class certificate of the College; or the Preliminary Examination of the Society of Apothecaries.

The most accessible of these are the University Local Examinations, as so many schools now arrange their curriculum with a view to them.

The London Matriculation Examination offers special advantages, as it is also the first step to a London medical degree as opposed to a diploma, a matter of moment, as the status of an M.D. is considerably higher than that of one who has not that distinction. Exemption from the London Matriculation can now be obtained through the Oxford or Cambridge Senior Local Examination.

Having been registered, the Medical Student has five years' training before him; there are several ways in which this may be pursued, but the examinations are much the same: in the first two or three years Preliminary Science Subjects (*i.e.*, chemistry, physics, and biology), and Intermediate Science Subjects (*i.e.*, anatomy and physiology), and in the last two or three the purely professional sciences (*i.e.*, medicine, surgery, &c.). He will be attached to a medical school and will also "walk the hospitals."

Broadly speaking, there are three courses open to him according to the kind of qualification he proposes to obtain. Whether (1) a medical degree at Oxford or Cambridge; (2) a medical degree at London or some other University; or (3) the diploma granted by the Colleges of Physicians and Surgeons (*e.g.*, M.R.C.S. and L.R.C.P. of London, L.R.C.S. and L.R.C.P. of Edinburgh, and L.F.P.S. of Glasgow).

The difference between a degree and a diploma is of no small importance: a young fellow at the Universities forms friendships with able men who intend to enter other professions, and these friendships are valuable to him in after-life; thus the graduate has, as a rule, a better standing socially and pro-

fessionally, and this advantage should be carefully considered at the outset. The degree course is harder, and thus the advantage of having the letters M.D. to one's name is not merely sentimental. Moreover, it frequently happens that the University man takes the examinations of the Joint Board of the Royal College of Surgeons and the Royal College of Physicians as well as those for his degree; his work is thus twice tested, and his capacity doubly guaranteed. Opinion may differ as to the comparative value of an M.D. degree at Oxford or Cambridge, or London; the London degree, as a test of ability, perhaps comes first, but the degree of the older Universities has a higher value socially. It has also its influence in deciding the voting for public appointments in connection with hospitals, the holding of which is often so essential a factor of future success. The Medical degree of the Scotch Universities, especially those of Edinburgh and Glasgow, have a very high reputation, while Dublin, Durham, and the Universities of Leeds, Manchester, and Liverpool, attract many students.

Cost of Course.—As to expense, the Oxford or Cambridge degree will cost about £850, that of London, £750, while expenses at the other Universities will range from £400 to £600; the expenses of an ordinary student at a London hospital, who desires to take the qualification of the diploma of the Conjoint Board, will be about £100 less than if he were aiming at a medical degree.

Details—Oxford or Cambridge Degree Course.—This involves three years' residence at the University, and remaining at school probably till 18 or

19. At the end of three years the student will have taken his B.A. (in Natural Science), which is necessary before proceeding to a degree in the higher faculty of medicine. • But during that period he will take examinations in preliminary and intermediate science for his M.B., and then join a medical school attached to a hospital in London or elsewhere as a third year student, and take two years in preparing for his final.

The expenses of the period spent at the University may often be materially decreased by the securing of suitable scholarships or studentships. The Tancred Studentship, for instance, at Gonville and Caius College, Cambridge, tenable under certain conditions for eight years, and awarded to medical students who are in need of help in providing the funds for their University career, is of the value of about £72 per annum. Particulars with regard to this Studentship may be obtained from George Edgar Frere, Esq., Lincoln's Inn Fields, London.

In the subsequent period of his training, spent in the London Medical School, his expenses for tuition will be from 60 to 68 guineas. It is to be noted that there are scholarships in most of the London Hospitals open to graduates. Great advantages are offered by the curriculum at the two University centres of Preliminary and Intermediate Medical Studies, namely, University of London, University College (apply T. Gregory Foster, Provost), and King's College (apply for particulars to the Secretary), while St. Bartholomew's, Guy's and St. George's Hospitals, as will be seen from the appended list of scholarships, are particularly liberal in the inducements they hold out to University men.

 SCHOLARSHIPS OPEN TO UNIVERSITY CANDIDATES.

St. Bartholomew's 3 University Scholarships of £50 to £75				
Guy's	3	"	"	£50 to £150
St. George's	2	"	"	70 gs. & £50
Middlesex	1	"	Scholarship	£60
St. Thomas'	1	"	"	£50
St. Mary's	2	"	Scholarships	£63
Charing Cross	2	"	"	£63
Westminster	4	"	"	£30 to £40

The examinations for these scholarships are up to the standard of intermediate science which has already been reached; they are held for one year, and the candidates in most cases must be under 25 years of age. Further details with regard to some of these hospital schools will be found in the section devoted to the Diploma Course and in the Appendix.

The remaining two years are spent in walking the hospital and preparing for the final M.B. Examination. The fees for obtaining this degree amount to £16 10s., and three years later the Bachelor may proceed to his M.D. on producing an original dissertation and paying a further fee of £10. Of course the M.B. is itself a qualification to practice; the doctorate is quite optional.

London Degree Course.—Those who take this generally join one of the London Medical Schools, at which the expenses for tuition vary from 120 to 150 guineas for the whole course, the necessary books and instruments about 20 guineas, special classes £25 to £30, examination fees, £20 for M.B., or, if one takes the further qualification of M.D. and M.S., £10 more. If a student also goes in for the diploma course, he

will have to pay further fees amounting to 40 guineas. Particulars with regard to the advantages offered to students by some of the leading medical schools will be found in the forthcoming section.

Diploma Course.—Here the examination fees are actually higher than for a degree, viz., £42, but, as the ordinary work of the medical school is sufficient and no special classes are taken by those who seek a diploma, the actual expenditure is about £100 less than that required for the degree. Board and lodging vary: rooms alone range from 12s. 6d. a week upwards, with board included from 30s. to 50s. Sometimes practitioners are willing to board and lodge a student for about two guineas a week. Or the student may join a residential college attached to a hospital, paying one guinea a week for board and from 14s. to 18s. for rooms. There is, however, only accommodation for a few at these colleges, and early application for admission is necessary.

In the case of a clever boy who has done well at school, there are many opportunities of lessening expenses at the London Medical Schools. Special attention may be drawn to the following well known institutions, while the reader should also consult the list of such schools given in the Appendix.

London University, University College, London.—Two Entrance Exhibitions for Natural Science are awarded of the value of 80 guineas each, the subjects of examination being Anatomy and Physiology. There are also many valuable prizes and scholarships awarded to students. The whole hospital has

recently been re-built and extended. Special attention is devoted to the elementary and intermediate stages of the instruction of medical students. For further particulars apply to the Provost.

King's College Medical School, which, also, devotes special attention to elementary and intermediate work, awards two open scholarships, one in Science and the other in Arts, of the value of £100 each; there are also two Science Exhibitions of £30 and £20, and one Medical Entrance Scholarship of £50. Numerous valuable scholarships and prizes are also offered for competition among students after entrance. For further information apply the Dean.

St. Bartholomew's Hospital.—At this School, the oldest in London, where the arrangements for elementary and advanced work are on the most complete scale, three entrance scholarships of from £75 to £150 are awarded; there will also, this year, be awarded an entrance scholarship in Arts of £100, and an Exhibition in Arts of £50 and a scholarship of £50 in Anatomy and Physiology. More than 20 valuable scholarships and prizes are open to competition among students in the school. Details may be obtained from the Dean of the Medical School.

St. George's Hospital.—The Medical School has been converted recently into a Clinical School, the entire teaching and laboratories being now devoted to subjects directly connected with medicine and surgery. For early years of study, arrangements have been made with the University of London for students to attend the unrivalled medical schools of University College and King's College. In addition

to the scholarships mentioned in the previous section, scholarships and prizes ranging in value from £15 to £100 are offered to students in the School. There are also many appointments open to students who have held House Office. Apply for particulars to the Dean.

Guy's Hospital offers facilities for a complete course of medicine and surgery. Attached to the hospital are modern buildings in which some 60 students can board on reasonable terms. Besides the entrance scholarships mentioned in connection with University candidates, there are awarded entrance scholarships in Arts of the value of £100 and £50 respectively. For students at the Hospital there is a studentship of £150, tenable for three years, and some eleven valuable prizes. The *Guy's Hospital Medical School Calendar* contains full information with regard to these scholarships. Apply for information to the Dean.

Scholarships in Science and Arts are also awarded by *Middlesex Hospital*, *Westminster Hospital*, *St. Thomas' Hospital*, *Charing Cross Hospital*, and *London Hospital*. The particulars in connection with these well known medical schools may be obtained upon application to their respective Deans.

The above mentioned entrance scholarships are, as a rule, tenable for one year, and candidates are generally under twenty. The higher ones go far to cover tuition expenses. Further, it will be noticed from the particulars already given that there are many other senior scholarships open to competition from year to year.

There are also many excellent provincial medical schools where the training is much the same as at the London Schools.

Among these might be mentioned as examples :—

University College, Bristol.—This School, through its connection with several large hospitals, enables students to obtain a wide and varied experience. For particulars apply to the Dean of the Medical Faculty.

Glasgow Royal Infirmary.—The number of beds, including the Ophthalmic Department, is 618, and the Institution is well equipped in every way. Students of the Glasgow Infirmary are eligible for two bursaries of £25 each. For particulars apply to J. Maxtone Thom, M.B., Superintendent.

University of Durham—College of Medicine, Newcastle-on-Tyne.—This institution offers many advantages to medical students, and is well known for the excellence of its arrangements. There are thirteen scholarships and prizes of Durham University open to students at the College. For further particulars application should be made to the Secretary.

Additional information with regard to these and other medical schools will be found in the Appendix. Generally speaking, at these provincial schools the cost of education is less than that at London, while the teaching is excellent: the reputation of the London Schools, however, make it desirable to attend them if possible.

Degrees at other Universities.—There are other degree courses which may be taken, the fees for which

vary slightly. Students, for example, who take the Durham course attend the College of Medicine at Newcastle, above referred to; the examination fee is 25 guineas.

In Scotland there are medical schools attached to the Universities of Edinburgh, Glasgow, and Aberdeen.

The examination fees come to 22 guineas. The largest number of medical scholarships is given at Edinburgh, where the Faculty of Medicine has a full curriculum in Medicine and Surgery; four degrees are conferred by the University, and they qualify for practice throughout His Majesty's dominions, and for admission to the Naval, Military, and other Public Medical Services in the United Kingdom; the scholarships at Edinburgh are available for three or four years, ranging in value from £25 to £100 a year, a considerable number (from £20 to £28) being held for one year, and competed for among students at the different stages of the medical course. Graduates in medicine have the opportunity of competing for some 10 scholarships or prizes varying from £31 to £153 in value.

At Aberdeen there are seven bursaries of from £7 to £22 tenable for three or four years, and at Glasgow they range from £16 10s. to £35, and are held for one, two, three, or four years.

At Liverpool University there is also an excellent medical school, which includes departments for the

study of Tropical Medicine, Public Health, and Comparative Pathology. There is a Residential Hall for students.

There are numerous scholarships, exhibitions, and fellowships, as well as other special grants and prizes. Further particulars can be obtained from the Registrar.

There are also well known medical schools at other Universities, *e.g.*, at Dublin and Manchester, all of which have their own scholarships and bursaries.

After qualification, if time and means permit, a further course of study at a Continental medical school is very advantageous, and for the more brilliant there are research scholarships attainable at most London Hospitals of about £100 in value. But these are few, and most men require to begin making a living at once. For beginners there are annual appointments as House Surgeon or Physician in London Hospitals and provincial Infirmaries, which bring valuable experience. For a year or two it is not unusual to obtain a surgeoncy on board ship, particularly on the great liners to America or the East; this is only advisable for a brief period, as it does not lead to much. In our chapter on the "Army" we have dealt with the splendid opportunities offered to able men in the Royal Army Medical Corps, and in our chapter on the "Navy" with the equally attractive post of Naval Surgeon. The competition is severe, and a special examination must be taken, but the pay is good and a pension secure.

Prospects.—The great majority of men must, of course, go into general practice, the prospects of which depend greatly on the talents developed in the course of training.

Speaking generally, the present is a good time for entering the profession. During recent years the number of those entering it has been reduced, partly owing to the addition of one year to the curriculum since 1892. Moreover, the disappearance of the unqualified assistant since about 1897 makes more openings for the beginner than previously existed. As a result the salaries obtainable have increased, for instance, the minimum weekly salary for a *locum tenens* is now four guineas as against three a few years ago. When the young medical man wishes to set up in practice for himself, some capital is very desirable to enable him to purchase a partnership in, or the succession to, an already established practice. If this is impossible, he must begin humbly on his own account, and work hard, and wait; the able man, if he shows judgment in choosing a locality which is not already over supplied with doctors, will in a year or two win recognition, and secure a comfortable income.

The man who has the inclination and ability to specialize in some branch, *e.g.*, the eye or the heart, etc., should certainly do so. His fees for special work will be higher than those for general practice, and, while he is making a name as a specialist, he need not entirely give up his general practice.

There are many public appointments held under Municipal Bodies, which, though often entailing a

considerable amount of work, help a young medical man to tide over the difficulties of his early years of practice.

For a young man of clear head and strong will, with a tender but courageous heart, there can be no profession wider in its blessing and nobler in its aim than that of the Physician or Surgeon.

Select list of Colleges, Medical Schools, and Public Schools, of which further particulars are given in Appendices I, III, and IV:—

London University, University College, London.	Durham School.
King's College, London.	Sedbergh School.
St. Bartholemew's Hospital, London.	Eastbourne College.
St. George's Hospital, London.	Bromsgrove School.
Guy's Hospital, London.	Giggleswick School.
University College Hospital.	Trent College.
University of Edinburgh Medical School.	King's School, Canterbury.
University of Liverpool Medical School.	King's School, Rochester.
University College, Bristol.	St. Lawrence College, Ramsgate.
University of Durham, College of Medicine, Newcastle-on-Tyne.	Christ College, Brecon.
Glasgow Royal Infirmary.	Plymouth College.
	Mounmouth School.
	Dover College.
	Brighton College.
	Dean Close School, Cheltenham.
	Grantham School.
	Kendal Grammar School.
	Leighton Park School.
	Windermere Grammar School.
	Carlisle School.

Regulations for the Examination of Candidates for Admission to His Majesty's Indian Medical Service.

The advantages offered to the young medical man by the Indian Medical Service are so substantial and the opportunities of usefulness so wide, that it may be well to give details of this attractive service.

1. The regulations are those in force at the present time. They are subject to any alterations that may be determined on.

2 Candidates must be natural-born subjects of His Majesty, of European or East Indian descent, of sound bodily health, and, in the opinion of the Secretary of State for India in Council, in all respects suitable to hold commissions in the Indian Medical Service. They may be married or unmarried. They must possess, under the Medical Acts in force at the time of their appointment, a registrable qualification to practise both medicine and surgery in Great Britain and Ireland.

Candidates for the January examination in each year must be between 21 and 28 years of age on the 1st February in that year, and candidates for the July examination must be between 21 and 28 years on the 1st August.

3 They must subscribe and send in to the Military Secretary, India Office, Westminster, *so as to reach that address by the date fixed in the advertisement of the examination*, a declaration according to specified form.

4 This declaration must be accompanied by the following documents:—

(a) *Proof of age* either by Registrar-General's certificate, or, where such certificate is unattainable, by the candidate's own statutory declaration, forms for which can be obtained at the India Office, supported, if required by the Secretary of State, by such evidence as he may consider satisfactory. A certificate of baptism which does not afford proof of age will be useless.

[N.B.—In the case of Natives of India it will be necessary for a candidate to obtain a certificate of age and nationality issued under G.G.O. No. 477, dated 22nd May, 1903, Military (Medical) Department.]

(b) A recommendation and certificate of moral character from two responsible persons—not members of the candidates' own family—to the effect that he is of regular and steady habits and likely in every respect to prove creditable to the service if admitted.

(c) A certificate of having attended a course of instruction for not less than three months at an ophthalmic hospital, or the ophthalmic department of a general hospital, which course shall include instruction in the errors of refraction.

(d) Some evidence of having obtained a registrable qualification.

(e) Any European educated in India and every native of that country will be required to produce a certificate signed by the Director-General, Indian Medical Service, that he is a suitable person to hold a commission in the Indian Medical Service.

5. The Secretary of State for India reserves the right of deciding whether the candidate may be allowed to compete for a commission in His Majesty's Indian Medical Service.

6. The physical fitness of each candidate will be determined by a Board of Medical Officers, who are required to certify that his vision is sufficiently good to enable him to pass the tests* laid down by the Regulations.

Every candidate must also be free from all organic disease, and from constitutional weakness, or other disability likely to unfit him

* These are as follows:—

(1.) If a candidate can read D=6 at a distance of 20 feet, and D=0.6 at any distance selected by himself with each eye without glasses, he will be considered **FIT**.

(2) If a candidate can only read D=24 at 20 feet with each eye without glasses, his visual deficiency being due to faulty refraction which can be corrected by glasses which enable him to read D=6 at 20 feet* with one eye, and D=12 at the same distance with the other eye, and can also read D=0.8 with each eye without glasses at any distance selected by himself, he will be considered **FIT**.

(3) If a candidate cannot read D=24 at 20 feet with each eye without glasses, notwithstanding he can read D=0.6, he will be considered **UNFIT**.

N.B.—Snellen's test types will be used for determining the acuteness of vision. Squint, inability to distinguish the principal colours, or any morbid condition subject to the risk of aggravation or recurrence in either eye, may cause the rejection of a candidate.

for military service in India. More detailed regulations as to the physical requirements will be forwarded on application.*

7. Candidates who pass the physical examination will be required to pay a fee of £1 before being permitted to compete.

8. On proving possession of the foregoing qualifications, the candidate will be examined by the Examining Board in the following subjects, and the highest number of marks obtainable will be distributed as follows:—

	Marks.
(1) Medicine, including Therapeutics ...	1,200
(2) Surgery, including diseases of the eye	1,200
(3) Applied Anatomy and Physiology ...	600
(4) Pathology and Bacteriology ...	900
(5) Midwifery and Diseases of Women and Children	600
(6) Materia Medica, Pharmacology, and Toxicology	600

N.B.—The examination in medicine and surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.

No syllabus is issued in the subjects of Pharmacology and Toxicology, but the examination will be conducted so as to test the general knowledge of the candidate in these subjects.

No candidate shall be considered eligible who shall not have obtained at least *one third* of the marks obtainable in each of the above subjects and *one half* of the aggregate marks for all the subjects.

For the clinical examinations each candidate should provide himself with note-book, pencil, stethoscope, and ophthalmoscope.

* Candidates may, if they wish it, undergo a preliminary examination by the Medical Board, which meets at the India Office every Tuesday.

9. After passing this examination, the successful candidates will be granted about a month's leave, and will then be required to attend two successive courses of two months each at Aldershot, and at the Royal Army Medical College, Millbank.

The course at Aldershot will include instruction in :—

- (1) Internal Economy.
- (2) Indian Military Law.
- (3) Hospital Administration.
- (4) Stretcher and Ambulance Drill.
- (5) Equitation.
- (6) Map Reading.

The course at the Royal Army Medical College will be in :—

- (1) Hygiene.
- (2) Military and Tropical Medicine.
- (3) Military Surgery.
- (4) Pathology of diseases and injuries incidental to Military and Tropical Service.

10. The candidate's commission as Lieutenant will bear the date on which the result of the examination is announced, but his rank will not be gazetted until he has passed the final examination, held at the conclusion of his period of instruction.

11. From the day on which the result of the examination is announced lieutenants on probation will receive an allowance of 14s. per diem (except under the provisions of Paragraphs 12 and 15); and during the period of instruction they will be provided with quarters, or, when quarters are not provided, with the usual allowances of a subaltern in lieu thereof, to cover all costs of maintenance. They will be required to provide themselves with uniform (viz., the regulation undress uniform and the mess dress of a Lieutenant of the Indian Medical Service, as described in Indian

Army Regulations, Vol. VII, with Sam Browne belt; a detailed list of the articles of uniform required will be sent to the successful candidates).

12. A Lieutenant on probation who is granted sick leave before the completion of his course of instruction and final admission to the service will receive pay at the rate of 10s. 6d. a day for the period of his sick leave. (See also Paragraph 4 of the attached memorandum.)

13. Candidates will be required to conform to such rules of discipline as may from time to time be laid down.

14. At the conclusion of the course, candidates will be required to pass an examination in the subjects taught during the course of instruction.

15. A Lieutenant who, within a reasonable period before the date at which he would otherwise sail for India, furnishes proof of his election to a Resident Appointment or to a preliminary appointment leading in due course to a Resident Appointment at a recognised civil hospital, may be seconded for a period not exceeding one year from the date on which he takes up such appointment, provided that he joins it within three months of passing his final examination, and that he holds himself in readiness to sail for India within fourteen days of the termination of the appointment. While seconded he will receive no pay from Indian funds, but his service towards promotion, increase of pay, and pension, will reckon from the date borne on his commission.

In special cases permission may be granted to Lieutenants to delay their departure for India, in order to sit for some further medical examination. Lieutenants remaining in England under such circumstances will receive no pay for any period beyond two months from the date of leaving the Royal Army Medical College, unless the period elapsing before the day on which the majority of the Lieutenants of the same seniority sail to India exceeds two months, in which case Lieutenants allowed to remain in England will receive pay up to that day. In such cases pay will re-commence on the day of embarkation for India.

All the provisions of this clause are subject to the general exigencies of the service.

16. Before the commission of a Lieutenant on probation is confirmed he must be registered under the Medical Acts in force at the time of his appointment.

17. Officers appointed to the Indian Medical Service will be placed on one list, their position on it being determined by the combined results of the preliminary and final examinations. They will be liable for military employment in any part of India, but with a view to future transfers to civil employment, they will stand posted to one of the following civil areas:—

- (1) Madras and Burma.
- (2) Bombay, with Aden.
- (3) Upper Provinces, *i.e.*, United Provinces, Punjab, and Central Provinces.
- (4) Lower Provinces, *i.e.*, Bengal, and Eastern Bengal and Assam.

The allocation of officers to these areas of employment will be determined upon a consideration of all the circumstances, including, as far as possible, the candidate's own wishes.

Officers transferred to civil employment, though ordinarily employed within the area to which they may have been assigned, will remain liable to employment elsewhere according to the exigencies of the service.

18. No candidate will be permitted to compete more than three times.

19. Candidates, who have been ~~spe~~cially employed in consequence of a national emergency, either as an officer, or in a position usually filled by an officer, will be allowed, under certain circumstances, to reckon such service towards pension.

Examinations for admission to the service are held twice in the year, usually in January and July.

N.B.—The exact date of the next examination and the number of appointments will be notified in the newspapers in due course.

Candidates will be supplied, on application, with copies of the papers set at the last examination preceding.

Memorandum regarding the Position of Officers appointed to His Majesty's Indian Medical Service.

1. This memorandum is based upon ~~the~~ regulations in force at the present time. They are subject to any alterations that may be determined on.

PASSAGE TO INDIA.

2. Officers on appointment are, when possible, provided with passage to India by troop transport; when such accommodation is not available, passage at the public expense is provided by private steamer, or a passage allowance granted, if preferred.

3. Any officer who may neglect or refuse to proceed to India if ordered to do so within two months from the date of terminating his course of instruction, or within 14 days of the termination of his hospital appointment if the Secretary of State for India has permitted him to hold one, will be considered as having forfeited his commission, unless special circumstances shall, in the opinion of the Secretary of State in Council, justify a departure from this regulation.

PAY PREVIOUS TO ARRIVAL IN INDIA.

4. The rate of pay drawn by Lieutenants of the Indian Medical Service previous to arrival in India is laid down in Paragraphs 11, 12, and 15 of the Regulations. A Lieutenant who is detained by illness in this country will be paid at the rate of £250 a year from the date on which he would otherwise have embarked until the date of embarkation, and at the rate of 14s. a day during the voyage to India. (For rates subsequent to their landing in India, see para. 16, 17, and 18.)

Pay under the Regulations referred to above is issued in this country up to the date of embarkation, and an advance of two months' pay at the same rate is also made prior to embarkation, which is adjusted in India in accordance with the rate laid down in para. 16.

GRÁDES AND PRECEDENCE.

5. The grades of Officers in the Indian Medical Service are six in number, viz. :—

- (1) Surgeon-General (ranking as Major-General*.)
- (2) Colonel.
- (3) Lieutenant-Colonel.
- (4) Major.
- (5) Captain.
- (6) Lieutenant.

PROMOTION.

6. A Lieutenant's Commission dates from the day on which the result of the examination at which he is admitted is announced.

7. A Lieutenant may be promoted to Captain on completion of three years' full-pay† service from date of first commission, but after completing 18 months' service and before promotion to the rank of Captain he will be required to pass an examination in military law and military medical organisation, the result of which may affect his promotion.

8. A Captain is promoted to Major on completion of 12 years' full-pay† service, but this promotion is accelerated by six months in the case of officers who fulfil certain specified conditions.

9. A Major is promoted to Lieutenant-Colonel on completion of eight years' full-pay† service in the rank of Major.

10. All promotions from the rank of Lieutenant-Colonel to that of Colonel, and from the rank of Colonel to that of Surgeon-General, are given by selection for ability and merit.

11. On appointment as Honorary Physician or Honorary Surgeon to His Majesty, an officer below the rank of Colonel is promoted to that rank, remaining supernumerary until absorbed.

12. For distinguished service in the field an Officer of the Indian Medical Service may receive substantive or brevet promotion.

* The Director-General, Indian Medical Service, will rank either as Major-General or Lieutenant-General, as may be decided in each case by the Secretary of State for India in Council.

† See, however, para. 41.

TENURE OF OFFICE IN ADMINISTRATIVE GRADES.

13. The tenure of office of Surgeon-Generals and Colonels is limited to five years.

14. Colonels, if not disqualified by age, are eligible either for employment for a second tour of duty in the same grade, or for employment in the higher grade of Surgeon-General by promotion thereto.

15. Absence on leave in excess of eight months during a five years' tour of duty involves forfeiture of appointment.

PAY AND ALLOWANCES.†

16. The following are the monthly rates of Indian pay drawn by Officers of the Indian Medical Service from the date of their arrival in India:—

Rank.	Unemployed Pay.	Grade Pay.	Staff Pay.	In Officiating Medical Charge of a Regiment.	In Permanent Medical Charge of a Regiment (i.e., Grade Pay + Staff Pay).
	Rs.	Rs.	Rs.	Rs.	Rs.
Lieutenant	420	850	150	425	500
Captain	475	400	150	475	550
„ after 5 years' service ..	475	450	150	525	600
„ after 7 years' service ...	—	500	150	575	650
„ after 10 years' service ...	—	550	150	625	700
Major	—	650	150	725	800
„ after 15 years' service ...	—	750	150	825	900
Lieut.-Colonel	—	900	350	1,075	1,250
„ „ after 2½ years' service	—	900	400	1,100	1,300
„ „ specially selected for increased pay.	—	1,000	400	1,200	1,400

† Note to paras. 16 to 20.—Under present arrangements, officers of the Indian Medical Service who are not statutory natives of India, receive exchange compensation allowance, to compensate them for the fall of the value of the rupee. The allowance consists of an addition to their salaries (subject to certain limitations) equal to half the difference between their salaries converted at (1) 1s. 6d. the rupee, and (2) the standard Government rate, which has been fixed at 1s. 4d. the rupee until further notice.

NOTES.—(a) Unemployed pay is drawn by officers of less than seven years' service who are not holding officiating or substantive charge of native regiments. Officers of more than seven years' service draw grade pay alone when unemployed. Staff pay is the pay of a command, and is drawn in addition to grade pay.

(b) Horse allowance is granted to officers in charge of cavalry regiments at the rate of Rs. 90 a month to Lieutenant-Colonels and Majors, and Rs. 60 a month to Captains and Lieutenants.

17. The principal administrative appointments are held by Colonels and Surgeon-Generals on the following consolidated salaries:—

Colonel, 16 (some in civil employ), from Rs.	1,800 to Rs. 2,500 per mensem.
Surgeon-General	1 at Rs. 2,200 ..
„	2 at Rs. 2,500 ..
„ (The Director-General I.M.S.)	1 at Rs. 3,000 ..

18. Specialist pay at the rate of Rs. 60 a month is granted to officers below the rank of Lieutenant-Colonel who may be appointed to certain posts.

19. No Officer, however employed, can draw more than the grade pay of his rank (see paragraph 16) until he has passed the examination in Hindustani known as the “Lower Standard.” The passing of this examination does not of itself bring any increase of pay to an officer, unless appointed to a substantive or officiating charge; but failure to pass disqualifies an officer, even when holding such substantive or officiating charge, from receiving any portion of the staff allowances of the appointment.

20. Surgeon-Generals and Colonels, on vacating office at the expiration of five years' tour of duty, are permitted to draw in India an unemployed salary of Rs. 1,350 per mensem in the former, and Rs. 1,000 in the latter case, for a period of six months from the date of their vacating office, after which they are placed while unemployed on the following scale of pay:—

	Surgeon-General. Per diem.	Colonel. Per diem.
After 30 years' service on full pay ..	£2 ' 5 0	£1 14 0
„ 25 „ „ ..	2 5 0	1 10 0
„ 20 „ „ or on promotion, should this period of service not be completed	2 0 0	1 8 0

PRIVATE PRACTICE.

21. Except in the administrative grades and in certain special appointments, medical officers are not debarred from taking private practice, so long as it does not interfere with their proper duties.

POSTS IN CIVIL EMPLOY.

22 A large number of posts in civil employ are ordinarily filled up from officers of the Indian Medical Service. Officers are required to perform two years' regimental duty in India before they can be considered eligible for civil employment. The principal appointments, together with the salaries attached to each, are stated in the following table:—

Description of Appointment.	Approximate Number of Appointments in each Class.	Salary per Mensem.			
		When held by a Lieutenant Colonel	When held by a Major.	When held by a Captain.	When held by a Lieut.
		Rs.	Rs.	Rs.	Rs.
Inspectors-General of Civil Hospitals	6	2,250-2,500	—	—	—
Sanitary Commissioner with Government of India	1	2,000-2,500	—	—	—
Inspectors-General of Prisons	8	1,500-2,000	—	—	—
Principals of Medical Colleges	2	1,650-1,800	1,200-1,300	—	—
Professorial Appointments	23	1,500-1,650	1,050-1,150	800-950	750
Sanitary Commissioners	6	1,500-1,800	—	—	—
Deputy Sanitary Commissioners	12	1,350-1,500	900-1,000	650-800	600
Bacteriological Appointments	5	1,500-1,600	1,050-1,150	700-900	650
Superintendents of Central Lunatic Asylums	6	1,400-1,550	1,050-1,150	700-900	650
Superintendents of First Class Central Jails	5	1,400-1,550	950-1,050	700-850	650
Superintendents of Second Class Central Jails	5	1,300-1,450	550-950	600-750	550
Civil Surgeoncies (First Class)	87	1,300-1,450	850-950	600-750	550
Civil Surgeoncies (Second Class)	171	1,200-1,350	750-850	500-650	450
Probationary Chemical Examiner	1	—	—	600-750	550

There are also six Chemical Examiners with Rs. 800—1,650 per mensem, and a number of Port Health Officers with Rs. 750—1,950 per mensem. Other appointments of Resident Surgeons and Physicians, at hospitals, &c., are on salaries ranging from Rs. 700 to 1,650 per mensem. There are also a certain number of appointments under the Political Department on salaries ranging from Rs. 450 to 1,450 per mensem, exclusive of local allowances.

23. Qualified officers of the Medical Service are also eligible for appointments in the Assay and Mint Departments. The salaries of these appointments are from Rs. 600—2,250 per mensem.

LEAVE RULES.

(Paras. 25 (2) to 29 apply only to Officers in Military employ.)

24. Officers of the Indian Medical Service, below the rank of Colonel, may be granted:—

(1) Privilege leave under such regulations as may from time to time be in force.

(2) Leave out of India, for no longer period than one year, capable of extension to two years' absence from duty, on the following pay:—

On first appointment	...	...	...	£250 a year.
After the commencement of the 10th year's service for pension	...	...	...	300 „
Ditto, ditto, 15th ditto	...	...	...	450 „
Ditto, ditto, 20th ditto	...	...	...	600 „
Ditto, ditto, 25th ditto	...	...	...	700 „

(3) Leave in India, but for the period of one year only, on full military pay and half the Staff pay of appointment.

25. No extension of leave involving absence from duty for more than two years, whether taken in or out of India, can be granted except on specially urgent grounds and without pay.

26. An officer unable on account of the state of his health to return to duty within the maximum period of two years' absence, unless he is under paragraph 25 specially granted an extension of leave without pay, is placed on temporary half-pay or the retired list, as the circumstances of the case may require. An officer is also liable to be placed on half-pay or the retired list should his health require an undue amount of leave, whether in or out of India.

27. Leave may be granted at any time, but solely at the discretion of the civil or military authorities in India under whom an officer may be serving.

28. An officer on leave, whether in India or out of India, is required to rejoin at once on being recalled to duty, unless certified by a Medical Board as unfit to do so.

29. Officers of the Administrative Grades may be granted one period of leave not exceeding eight months during their tenure of appointment.

30. Extra furlough may be granted to officers desirous of pursuing special courses of study at the rate of one month's furlough for each year's service up to 12 months in all.

HONOURS AND REWARDS.

31. Officers of the Indian Medical Service are eligible for the military distinction of the Order of the Bath, and for other orders, British and Indian, and for good service pensions.

Six of the most meritorious officers are named Honorary Physicians, and six are named Honorary Surgeons to His Majesty.

RETIRING PENSIONS AND HALF-PAY.

32. Officers of the Indian Medical Service are allowed to retire on the following scale of pension, on completion of the required periods of service:—

					Per annum.
After 30 years' service for pension					£700
" 25 "	"	"	"	"	500
" 20 "	"	"	"	"	400
" 17 "	"	"	"	"	300

33. Service for pension reckons from date of first commission, and includes all leave taken under the rules quoted in paras. 24 to 30 (See also para. 41.)

34. A Surgeon-General, after three years' active employment in that appointment, is entitled to retire upon a pension of £350 per annum, in addition to that to which he may be entitled under the above scale.

35. A Colonel is entitled, after three years' active employment in that appointment, to retire upon a pension of £125 per annum, in addition to the pension to which he may be entitled under the above scale, and after five years of such employment on an additional pension of £250 in all.

36. In each of the above cases stated in paras. 35 and 36 eight months' absence on leave is allowed to count towards actual service in those grades. (See para. 30.)

37. A Surgeon-General or Colonel who has completed his term of service and has reverted to British pay (see para. 20) may reside in Europe, at the same time qualifying for higher pension.

38. With a view to maintain the efficiency of the service, all officers of the rank of Lieutenant-Colonel

and Major are placed on the retired list when they have attained the age of 55 years, the Director-General, Indian Medical Service, when he has attained the age of 62 years, and all other Surgeon-Generals and Colonels when they have attained the age of 60 years. But a Lieutenant-Colonel, who has been specially selected for increased pay, if he attains the age of 55 years before he becomes entitled to the pension for 30 years' service, may be retained until completion of such service; and in any special case, where it would appear to be for the good of the service that an officer should continue in employment, he may be so continued, subject in each case to the sanction of the Secretary of State for India in Council.

39. Officers placed on temporary or permanent half pay under para. 26 are granted half-pay at the following rates —

	Rates of Half-Pay					
	Per Diem			Per Annum		
	£	s.	d.	£	s.	d.
Under 5 years' service - - - -	0	6	0	109	10	0
After 5 years' service - - - -	0	8	0	146	0	0
„ 10 years' service - - - -	0	10	0	182	10	0
„ 15 years' service - - - -	0	13	6	246	7	6
Lieutenant-Colonel, under 3 years' service as such - - - -	1	0	0	365	0	0
Lieutenant Colonel, over 3 years' service as such - - - -	1	7	6	501	17	6

Surgeon-Generals and Colonels, when in circumstances in which other officers would draw half-pay, receive the unemployed pay of their rank (see para 2.) Officers cannot retire in India on half-pay (No 45, 28th February, 1863)

An officer of less than three years' service, although he may be transferred to the half-pay list under the general conditions of transfer, will not be granted any half pay unless his unfitness has been caused by service

INVALID PENSIONS.

40. An officer who has become incapacitated for further service in India on account of unfitness caused by duty may, after he has been two years on temporary half-pay, be granted an Invalid Pension on the following scale:—

						Per annum.
After 16 years' pension service	...	...	...	...	...	£272
„ 15 „ „ „	...	...	...	...	...	252
„ 14 „ „ „	...	...	...	...	...	232
„ 13 „ „ „	...	...	...	...	...	212
„ 12 „ „ „	...	...	...	...	...	192

41. Time (not exceeding one year) passed on temporary half-pay reckons as service for promotion and pension, in the case of an officer placed on half-pay on account of ill-health contracted in the performance of military duty.

42. Officers of the Indian Medical Service are liable, after retirement on pension before completing 30 years' service, to recall to military duty in case of any great emergency arising, up to 55 years of age.

WOUND PENSIONS.

43. Officers are entitled to the same allowances on account of wounds received in action and injuries sustained through the performance of military duty, otherwise than in action, as are granted to combatant officers of His Majesty's Indian Military Forces holding the corresponding military rank.

FAMILY PENSIONS.

44. The claims to pension of widows and families of officers are treated under the provisions of such Royal Warrant regulating the grant of pensions to the widows and families of British officers as may be in force at the time being.

45. The widows and families of officers are also entitled to pensions under the Indian Service Family Pension Regulations, and subscription under those Regulations, from the date of arrival in India, is a condition of appointment, except in the case of natives of India, for whom it is optional.

ii—Dental Surgeons.

A student is required, before the commencement of his professional education, to pass the same Preliminary Examination as the medical student. We have already given a list of the examinations recognised by the General Medical Council. His aim will now be to secure the diploma of the Licence in Dental Surgery (L.D.S.), and he will pass through the following course:—

- (1) Two year's instruction in Dental Mechanics under a qualified Dental Surgeon.
- (2) At least two years' Professional and Hospital study, which will include:—
 - (a) Practical classes and lectures in the Medical School.
 - (b) General Hospital Practice.
 - (c) Special Dental Lectures and Dental Hospital Practice.

After passing the Preliminary Examination he will begin his professional studies by becoming apprenticed, on payment of a premium ranging from £50 to £150, to a registered Dental Surgeon; or he can attend a recognised Dental Hospital. In either case, within fifteen days he should register himself at the office of the General Medical Council, 299 Oxford Street, London, W., as a Dental Student. Before obtaining his L.D.S. he has now three examinations to pass. These are the following:—

- (1) The Preliminary Science Examination consisting of Part I, Chemistry; Part II, Physics. Both subjects must be passed at the same time.

The examination is held in January, March (or April), July, and October each year; and candidates must give 14 days' clear notice of their intention to sit, to F. J. Hallett, Esq., Examination Hall, Victoria Embankment, London, W.C.

The fee for examination is £3 3s. 0d. This examination may be taken before entering a Dental School or commencing apprenticeship, or during either of these periods.

Before admission to the Examination, candidates must produce evidence of having received instruction in Chemistry 180 hours, and 120 hours in Physics at a recognised Institution. These courses need not be completed within one year nor need they run concurrently.

In view of the above-mentioned conditions it is well for parents to exercise due care with regard to the selection of a school for their sons, and to see that the laboratory equipment of the one they choose is in accordance with the General Medical Council. A list of suitable schools will be found in Appendix I.

(2) The First Professional Examination. Subjects:--Mechanical Dentistry and Dental Metallurgy.

This examination is held in May and November each year, and candidates must give 21 days' clear notice of their intention to sit to the same address as in the case of the Preliminary Science Examination.

The candidate must produce evidence that he has spent two years in mechanical training under a Practitioner or in a recognised Dental Hospital; that he has been registered in accordance with the

directions given above; and that he has attended in a Dental Hospital or School courses of lectures in specified subjects connected with Dentistry, including Practical Dental Mechanics. The fee for this examination is £2 2s. 0d.

(3) The final, or second Professional Examination, is divided into two parts, which may be taken either together or separately.

Part I comprises General Anatomy, Physiology, General Pathology, and Surgery. Part II Dental Anatomy and Physiology, Dental Pathology, and Surgery, and Practical Dental Surgery.

Candidates must give twenty-one days' clear notice of their intention to sit for this examination to the address given above. They must have passed four years in acquiring professional knowledge subsequently to registration and have attended specified courses of theoretical and practical lectures in subjects connected with his profession at a recognised Dental Hospital and School. The fee for the second Professional Examination is £5 5s. 0d. (Part I, £3 3s.; Part II, £2 2s.) The Examination is held in May and November each year. There is a further fee of £10 10s. 0d. to be paid before the diploma is granted, the total fees for the L.D.S. thus amounting to £21. The fees for the course of Hospital Study will vary according to the medical school the student joins; and will be found to range from £50 to £170. Among the recognised Dental Schools are those at Guy's Hospital, London; Liverpool University; University College, Bristol. The Royal Dental Hospital and London School of Dental Surgery is well

known and is equipped with all the most modern appliances. Five scholarships, ranging in value from £20—£50, are awarded in connection with this Institution, further particulars of which can be obtained from the Dean; consult Appendix.

The Edinburgh Dental Hospital and School is also well known, and offers great advantages to the intending Dental student. Numerous prizes are competed for annually at this school, and a bursary of one year's free Hospital Practice is awarded to the student who passes the First Professional Examination with the highest marks. Particulars with regard to this Dental School may be obtained upon application to the Dean; consult Appendix.

A book of questions set at the Examination for the Licence in Dental Surgery for the last few years may be obtained from Messrs. Taylor & Francis, Publishers, Red Lion Court, Fleet Street, London, E.C. Price 6d. each year, post free 6½d.

While it is true that the training for the L.D.S. is all that the Dental Surgeon really requires, that the daily work of his profession is chiefly manipulative, and that the best manipulators and mechanics make the most successful Dental Surgeons, yet some students take a wider view of training, and seek in addition to the L.D.S. the double Diploma of the Conjoint Board, viz., the L.R.C.P. (Lond.) and M.R.C.S. (Eng.). The inclusive fee at the leading Medical Schools for this extended and combined course is about 190 guineas. Particulars of several of the institutions where such a course can be pursued are to be found above.

Prospects. A well-trained man, who is skilful and has pleasant manners and a sympathetic nature, has very good prospects. An income of £400 to £600 is quite common, while a Surgeon, Dentist with a good-class connection will make £1,000 per annum or more.

Select list of Colleges and Schools, as under "Physicians and Surgeons," p. 108.

Royal Dental Hospital, London—Appendix IV.

Edinburgh Dental Hospital—Appendix IV.

iii.—Veterinary Surgeons.

The boy who wishes to be a Veterinary Surgeon should have much the same qualifications as the would-be medical man, but, in particular, he should have a natural fondness for animals.

The course of training resembles the medical: the student must have passed a Preliminary Examination recognised by the Council of the Royal College of Veterinary Surgeons, which has the sole right of granting diplomas in this branch of the profession, though application has recently been made by Edinburgh University for powers to grant a diploma. He must be sixteen before entering a Veterinary College, corresponding to the Medical School, and the period of training is four years at least. There are four examinations to pass, one at the end of each year; if a student fails to pass in any one of them, he not only loses time, but must pay a further fee of three guineas for each re-examination. Three failures at any examination forfeit the right of pupilage.

- Regular attendance at Lectures, Demonstrations, and Class Instructions is essential, as a certificate of such attendance is necessary before admission to any examination. The annual course begins in October, and it is advisable to have passed the preliminary so as to commence study at College with the opening of the session.

The subjects required for the Preliminary Examinations are the same as for the Medical (see p. 95), and, practically, the list of examinations, from which one may choose, is the same. In particular, the examination of the College of Preceptors, held in London, Birmingham, Bristol, Leeds, Liverpool, and Manchester, and possibly other towns, in March, July, September, and December; and those of the Educational Institute of Scotland, held in Edinburgh, Glasgow, London, Liverpool, and Dublin, in January, April, July, and September, are recommended. Thirty days' notice of intention to sit is required in the case of the College of Preceptors' Examination, for which the fee is £1 5s. 0d. Apply the Secretary, College of Preceptors, Bloomsbury Square, London, W.C., while for the Examination of the Institute five days' notice is required, and the fee, £1 0s. 0d., must be sent to D. M. Murray, Esq., 34 North Bridge Street, Edinburgh.

The best known Veterinary Colleges are the Royal Veterinary College, Camden Town, London, N.W., and the Royal (Dick) Veterinary College, Edinburgh. What was formerly the New Veterinary College, Edinburgh, has now been transferred to Liverpool, and has been incorporated in the University of

Liverpool; for particulars apply to the Registrar. The fees at the London College, over and above the examination fees for the Diploma, are an Educational or Entrance fee of 80 guineas, which covers the four years, and may be paid in four annual instalments of 20 guineas, all in advance, an Entrance fee of one guinea, and an annual fee of half-a-guinea to the Library. Should the student, through failing to pass, have to stay beyond the four years, he pays twenty guineas for each year or portion of a year. The members of the College Staff are prohibited from conducting private classes, and no additional fees are charged for any instruction that may be necessary to supplement the regular course of lectures.

At the Royal (Dick) College, Edinburgh, the fees are somewhat less, viz., a matriculation fee of one guinea, and class fees for all subjects and for the full enjoyment of all the privileges of the College amount to 60 guineas, payable in instalments, also in advance.

The examination fees of the Royal College of Veterinary Surgeons amount to twenty guineas, i.e., five pounds for each of the four examinations, and one pound for registration in passing the final.

There are prizes at the Veterinary Colleges open to competition among the students. The most valuable are at the London College: four "Centenary Prizes" of £20 each given annually to the most efficient student in each of the four stages, various small prizes varying from two to five guineas, and annual exhibitions, of which due notice is given from time to time.

At the Dick College there is a bursary of £20 given to the student who has obtained the best marks in the various competitions throughout the entire curriculum, and, at the close of their final period of study, all students from all Veterinary Colleges in Great Britain may compete for the Fitzwygram Prizes of £50, £30, and £20.

At each College there are also medals given; it is wise to compete for these, for they are valuable recommendations to candidates who may seek public posts. The Corporations of large towns, and tramway and railway companies, have posts for well qualified Veterinary Surgeons; the Veterinary Surgeon to a large town may receive from £500 to £700 a year with house and the use of two horses. In private practice much depends on the choice of a suitable locality, and, after that, on the surgeon's own skill and ability.

The Calendars giving full information as to course of study, fees, &c., may be obtained from the Secretary, Royal Veterinary College, Camden Town, London, N.W.; or the Secretary, Royal (Dick) Veterinary College, Clyde Street, Edinburgh.

Army Veterinary Department. Valuable posts are open in this department. Candidates for admission must make a written application to the Under-Secretary of State, War Office, London, and a personal interview will be necessary with the Director-General, Army Veterinary Department. Candidates must be between 21 and 27, members of the Royal College of Veterinary Surgeons, unmarried, and in all respects suitable to hold commissions in

the Army. They must forward (a) a certificate of birth or baptism; (b) testimonials of moral character, and will then be examined by a Board of Army Veterinary Officers. Examinations will be held as vacancies occur, and those who obtain the qualifying number of marks will receive commissions according to the order of merit in which they pass.

The examination will consist of two parts, written and practical.

The substantive ranks of the Officers of the Department are:—

	Pay.	Retired Pay.
Veterinary Colonel ...	£850	£600
Veterinary Lieut.-Colonel	£456 to £547	£320 to £420
Veterinary Major	£282 to £438	£155 to £350
Veterinary Captain }		
Veterinary Lieutenant ...	£250 on Appointment.	

•V.—THE LAW.

i.—The Bar.

Qualifications.—In no other learned profession is competition so keen as at the Bar, for the lucrative incomes and splendid appointments attainable in or through the profession attract not only a large number of men, but a large number distinctly above the average in ability. The Bar, therefore, is not the profession for the student of average qualities, but for the man of exceptional power and fixed determination to succeed, who is also sufficiently equipped with other means to enable him to live without earning anything at the Bar for some years after having been actually called. He must possess fluency of speech, insight, a sound grasp of law, and a wide knowledge of human nature. Above all, he must have the power of getting up a new subject rapidly. A barrister may at any time be called upon to discuss the details of almost any art or science. One day he may be engaged on a case of poisoning, where he must speak at length on the comparative effects of various poisons on men and on rabbits. The next day he may have to give reasons for believing that handwriting experts are or are not capable of proving the authorship of a forged cheque; and the day after one may find him busy with a libel case, showing how far it is actionable to print the name of a prima-donna in small letters on a concert poster. He must also have a strong constitu-

tion, if he is to stand any chance of enduring the wear and tear of a successful barrister's life. Lord Eldon is said to have named the two requisites for success at the bar in the words, "Live like a hermit and work like a horse." And a barrister in active work must be prepared to spend most of his day, from 9 a.m. to 6-30 p.m., either in Court or in his Chambers, and then to carry home with him, for after-dinner perusal, briefs enough to occupy him for several hours more—and that not for one day only, but for a whole session. And, lastly, he must have tact and self-restraint enough to make him keep a client from going to law, even though he loses fees thereby. This is a hard saying for those who are still in their early struggles: but it pays in the end. "Be moderate," said Justice Bigham, "be moderate and careful, and do nothing which can be construed into having been done in the interests of yourself. The man who keeps a client out of litigation is the man who in the long run is successful."

Although^w no University qualification is actually requisite for admission to membership of, or "call" to, the Bar, special privileges and exemptions are granted to University men, and there cannot be any doubt as to the desirability of studying at some University previous to call. Many distinguished lawyers have been educated at either the Scotch or Welsh or Irish Universities, but the greatest advantages for the student's subsequent career as a Barrister are undoubtedly offered by the Universities of Oxford and Cambridge.*

* For an estimate of the expenses at Oxford and Cambridge see p. 8.

Various Scholarships and Prizes for Law are given at Oxford and Cambridge, and excellent opportunities are afforded for training in the art of public speaking in the Debating Societies and Clubs, and at the Oxford and Cambridge Union Societies.

The Bar Student, who cannot secure the benefit of a course at either Oxford or Cambridge, would be well advised to join University College or King's College, London, and study for the LL.B. degree at London University.

Admission to the Bar.

Necessary Steps to be taken.—Every person applying to be admitted as a student must, before admission, either satisfactorily pass the preliminary examination, or satisfy the Masters of the Bench that he has already passed a public examination ("Smalls" at Oxford, "Little Go" at Cambridge, or Matriculation at London) at some University within the British Dominions, or for a commission in the Army or Navy, or for the Indian Civil Service, the Consular Service, or Cadetships in the three Eastern Colonies of Ceylon, Hong Kong, and the Straits Settlements. Possibly the Board of Examiners might, if applied to, accept other equivalent examinations in place of these.

The Preliminary Examination.—The days fixed for the examination can be ascertained on application to the Inn which the student proposes to join. The examinations are generally held before the commencement, and, also, during the continuance

of each Law Term; candidates are required to give two days' notice of the day on which they intend to present themselves for the examination, to the Secretary of the Examiners, Lincoln's Inn Hall, W.C.

The Examiners issue no list of text books, but the examination comprises:—(a) The English language, (b) The Latin language, (c) English History. The examination is on paper in all cases, and is *viva voce* at the discretion of the Examiners. The examination in the Latin language consists of translations from one or more classical authors, and the English language is tested from the answers given in other subjects.

Candidates who fail cannot present themselves again until the following term.

Certificates.—Every applicant for admission must procure from the Inn of Court a form of admission, which he must present duly completed at the preliminary examination. He must declare that he is unconnected with the Law or with certain other occupations. He must also obtain and take with him to the examination two certificates, each signed by a Barrister of five years standing (not necessarily a member of the same Inn), testifying to the applicant's respectability and fitness for admission to the Inn.

FEEs, &c., ON ADMISSION TO AN INN.

Twelve Terms have to be kept at one of the Inns, and the Payments at each vary as follows —

Fees, &c.	The Inner Temple.	Middle Temple.	Lincoln's Inn.	Gray's Inn.
Stamps and Fees Deposit ...	£40 16s. 3d. £100—returnable without interest on Call, Death, or Withdrawal	£40 6s. 3d. ... £50—returnable as aforesaid ...	£40 ... £50—returnable as aforesaid	£39 13s. 6d. £50—or find two Sureties, House- holders in United Kingdom 3s. 6d. per dinner — £89 2s. 4d. Students must execute Bond for £50
Keeping Term ... Students' Fees ... On Call ... Bond ...	£1 2s. 0d. each Term ... 6s. 3d. each Term ... £99 10s. 0d. ... £50—with two Sureties for payment of Dues, or further deposit of £50 required	10s. each Term ... Dinners, 2s. each; Ann. Duty, £1 £99 10s. 0d. ... —	£1 1s. 0d. each Term 5s. per Term ... £94 ... —	— — — —
Exemptions from Deposit	Members of the Scotch Bar, the Universities of Oxford, Cambridge, Dublin, London, Durham, Victoria, or Royal University, Ireland, are not required to make a deposit, provided that before Call they take a Degree or produce a Certificate of having kept two years' Terms at such University	On execution of Bond for £50— in case of Members of Scotch or Irish Bars and Scotch and other Universities in same manner as Inner Temple NOTE—Every Student has the choice of giving Sureties or paying the deposit	On execution of Bond for £50— Similar to Middle Temple, except that they are not obliged before Call to take a Degree or produce a Cer- tificate of having kept two years' Terms at their University £149 12s. 0d. ..	— — — —
Total Cost of Call to Bar	£158 0s. 0d. ...	Including 72 dinners. £157 1s. 3d. University Men, including 36 dinners, £158 9s. 3d.	£149 12s. 0d. ..	£141 7s. 10d. University Men (36 dinners only) £135 1s. 10d.

Keeping Terms.—Upon admission to an Inn a student can use the Library of the Inn and the Common or Reading Rooms. He must keep twelve terms before call by dining in the Hall six nights during each term; exception is made in the case of students of Universities above mentioned, who can keep their terms by dining three nights only each term. The terms vary in length from three to four weeks and are called Hilary, Easter, Trinity, and Michaelmas respectively. Dispensations from keeping two terms, but not more, may be granted by the Benchers of an Inn to a student who has gained a studentship or certificate of honour in examinations.

Examinations, Lectures, &c.—Instruction is provided for students by means of Readers and Assistant-Readers, who lecture and hold classes in (A) Roman Law, (B) Constitutional Law—English and Colonial, (C) Evidence and Criminal Law and (D) such branches of the English Law and Equity as the Council may prescribe, namely, (a) The Law of Persons, including Marriage and Divorce, Infancy, Lunacy, and Corporations; (b) Procedure, Civil and Criminal; (c) The Law of Obligations, including Contracts, Torts, Allied Subjects (implied or quasi-contracts), Estoppel or Commercial Law, with especial reference to Mercantile Documents in daily use. There is also a separate paper on Real Property before the final examination, with the alternative subjects of Roman Dutch Law, Hindu, and Mohammedan Law. Examinations are held before the beginning of each term. The student may present himself for examination in classes A, B, or C any time after admission, but he must pass in these

subjects before presenting himself for examination in the final or Class D subjects, and, without special leave from the Council, the examination in Class D subjects cannot be taken before the student has kept six terms. The rules, subjects, and time table are published some months before each examination. The only exemption allowed by the Council from any part of the examination qualifying for call is that of accepting, as an equivalent for the examination in Roman Law, a degree granted by any University within the British Dominions, for which the qualifying examination included Roman Law, or a certificate that the student has passed such an examination, or the testamur of the Public Examiners for the Degree of Civil Law at Oxford that the student has passed the necessary examination for the degree of B.C.L.

It is possible for a student who is really in earnest and attends lectures and classes properly to pass all the examinations after two years' study.

Scholarships and Prizes.—A studentship of 100 guineas a year, tenable for three years, is offered at the Hilary and Trinity examinations each year to the student who passes the best examination in Class D and obtains a Certificate of Honour, and special prizes of £50 each are awarded at the Easter and Michaelmas examinations to students who pass the best examinations in Class B and Class C, and a Barstow Scholarship is also awarded each year by the Council of Legal Education.

Various other prizes and scholarships are also awarded annually to students at the several Inns.

Call to the Bar.—Having kept all the necessary terms, having obtained from the Council of Legal

Education a certificate of his fitness to be called, and having attained the age of 21 years, the student can be called to the Bar.

Reading in Chambers.—Reading in Chambers is not now a necessary preliminary to being called to the Bar, but it is to all intents and purposes essential for the Barrister who intends to practise, and at least two years should, if possible, be devoted to this method of gaining practical experience. The fees payable to Counsel for reading with him are at the rate of 100 guineas a year. It is not advisable to begin before passing all the examinations, and it is best to be called to the Bar not much before or after the beginning of the last year of reading in Chambers.

Possible Emoluments.—The largest individual incomes are made by King's Counsel practising at the Parliamentary and Common Law Bars, and some of these incomes have been known to run into tens of thousands.

The Lord Chancellor has an income of £10,000, while in office, and £6,000 when out; the Lord Chief Justice £8,000; the Master of the Rolls and Judges in the House of Lords, £6,000 each; and Judges of the Supreme Court £5,000 each; the Attorney-General £7,000 and fees; and the Solicitor-General £6,000 and fees. The fees in each of the two latter cases have been over £3,000 in one year, and yet one of these offices has been declined by an eminent advocate because it would entail a considerable loss in income! These high judicial appointments are, however, only open to those who attain the front rank in their profession.

To those with social or political influence numerous other official appointments are open, amongst which may be mentioned County Court Judgeships, Judgeships of the London City Courts, Stipendiary Magistracies, Recorderships, Judgeships and Appointments in the Colonies. India offers many advantages to a Barrister with some little capital at command, as a good practice may be worked up there, leading to appointments as Judges of the small courts. Government work is also open to Barristers there, which will not interfere with private practice, and may easily be followed by a well-paid Government appointment and an excellent pension.

There is, in fact, no other profession in which an able man, well backed by solicitors or influential friends, can so soon make a large income. It is equally true that there is no other profession in which real unassisted merit meets so often with tardy recognition. Even those who have afterwards become famous and earned large fortunes, have confessed that during their first year their income was hardly large enough to pay their clerk. Lord Selborne has left it on record that he started on his road to the Woolsack by taking £26 during his first eighteen months; Mr. Justice Bigham made no more than seven guineas in his first year. Consequently the Barrister, who has no such influence, must either be able to make some money by literary work, &c., or have private means to keep him during the years he may have to wait for recognition.

The income of a Junior Barrister in the front rank at any of the various Bars runs into at least four figures, and may probably rise to several thousands, but it is only the more fortunate Barristers

who can attain to the front rank within the first ten years after call, and, if a man fails to attain it within twenty years, his chances of ever doing so are very remote. It is quite possible, however, for him to make a very fair income as compared with other professions without ever reaching the front rank.

Once called to the Bar, a Barrister is free to practise in any Court, but many find it convenient to specialise more or less. The subject in which they specialise is sometimes determined by inclination, sometimes by influence, sometimes by the mere chance of winning a verdict which happens to catch the eye of the solicitors. One man will be famous for defending in criminal cases, another will find his work more in Probate or Divorce: a third will be a recognised authority on Marine Insurance. In most cases a student should not think of specialising till some time after he has begun to get briefs: but those who have a strong natural taste for mathematics, mechanics, or natural science, will often find it advantageous to devote themselves peculiarly to Patent Law.

List of Colleges (other than those of the Universities of Oxford and Cambridge) specially recommended, of which further particulars are found in Appendix I:—

Edinburgh University.

University College, London.

King's College, London.

University College and Hatfield Hall, Durham.

University of Liverpool.

University College of Wales, Aberystwyth.

University College, Reading.

For list of Public Schools consult Appendix IV.

ii.—Solicitors.

The fact that the practice of Solicitors, unlike that of the Bar, is to be found all over the kingdom and not merely round the important centres of administration of law and justice, tends to place opportunities more readily within the reach of a young Solicitor than is usually the case with a young Barrister who has to make his way in the world unaided by any special influence or help.

It is generally stated that the profession is overcrowded; certainly its numbers are increasing; there are now in England, 16,500 Solicitors, as against 14,700 twenty years ago; and there is absolutely no doubt that, in the case of a young Solicitor starting without any business connection or influence, much patience and perseverance will be necessary before he can build up a really good practice for himself.

Qualifications.—One of the most important requirements for the student intending to adopt this profession is that of a good memory, for the voluminous works to be mastered require close and persevering study, and the examinations to be passed, particularly the final examination, are certainly not easy.

A good memory, a clear head, a persuasive manner, fluency of speech, caution, tenacity, knowledge of human nature,—these are some of the qualities that go to make the successful Solicitor. He must, of course, know law, but he must know many things in addition to law. Sir Edward Carson, then Solicitor-General, speaking in Leeds in 1904 at the annual dinner of the "Law Students' Society," remarked

that he might be expected to say that, above all things, they should study law—in a somewhat modified fashionable phrase, that they should “think legally.” But he took a different view of the profession. If there was anything in the world he truly hated it was the man who was merely a professional man. There was nothing he more disliked than the man who had become a specialist, whether he was a theologian, a doctor, a barrister, or a solicitor. He did not believe that the real road to success was by a mere study of law, or by being merely lawyers. “Recollect,” he proceeded, “I am not in the least attempting to lay down that the lawyer should be a man who knows no law. What I desire to say is that in all the professions there is a great tendency to specialise, and I think there is far more to be gained by young men, having once attained a sufficient knowledge of law and legal procedure, applying themselves to wider studies—the studies not merely of history, of literature, and of affairs, but, above all things, the study of human nature.” And, more recently, Sir J. Gorell Barnes, at a dinner of the Birmingham Law Students’ Society, after advising his hearers to get a good grip of commerce from the point of view of book-keeping, added, “It is not merely brains that make a successful lawyer. If a man looks forward to standing at the top of his profession, he must have character, which means honesty, trustworthiness, and the capacity to give the right advice.”

The question whether a University education is, or is not, such a help to advancement in the profession as to justify the additional cost (which in the case of

an Oxford or Cambridge course would be from £500 to £700) is much disputed. A University degree is certainly not an essential preliminary to the profession; and there are solicitors who maintain that the advantages it brings do not justify the time and money which it costs. Yet it is fair to add that the Law Society issue a circular recommending it strongly. Of course Oxford or Cambridge offer the widest social advantages; on the other hand, an Arts degree will enable the student to proceed to a degree in Law for which, in the case of London University, he may study without in the least neglecting professional duties.

Course of Training.—The preliminary examination should be passed before a lad leaves school. It is held at the Incorporated Law Society's Hall, Chancery Lane, London, and at various prominent centres, such as Bristol, Birmingham, Carlisle, Leeds, Liverpool, Manchester, and Newcastle-on-Tyne (and may also be held in other towns) in the months of February, May, July, and October in each year. Thirty days' previous notice must be sent to the Secretary, The Law Society, Chancery Lane, London, W.C., together with the examination fee of £4. Candidates who fail pay a fee of £1 for any subsequent renewal notice.

The preliminary examination consists of:—

1. Writing from Dictation.
2. Writing a short English Composition.
3. Arithmetic. Algebra up to and including Simple Equations. Euclid, the first four Books.

NOTE.—Algebra and Euclid are not compulsory, but if they are taken up, only one language in No. 6 is required instead of two.

4. Geography of Europe and History of England.
5. Latin, Elementary.
6. Any two of the following languages selected by the Candidate:—Latin, Ancient Greek, French, German, Spanish, Italian.

No list of books is issued, but long passages are given for translation at sight, and Candidates are allowed to use dictionaries provided by themselves.

The following are exempt from the Preliminary Examination:—Bachelors of Arts or of Laws of Oxford, Cambridge, Durham, Dublin, Royal University of Ireland, Victoria University, Manchester, Liverpool, University of Wales, Leeds. Also B.A.'s, M.A.'s, Bachelors of Laws, Doctor of Laws in any of the Scottish Universities (if the degrees are not honorary) and Utter Barristers in England.

Also those who have passed any of the following examinations:—

First Public Examination before Moderators at Oxford.

Previous Examination at Cambridge.

Examination in Arts for the second year at Durham.

Oxford or Cambridge Senior or Junior Local Examinations.

Oxford and Cambridge Higher Certificate Examinations.

Matriculation Examination, London or Dublin.

First Class Certificate, College of Preceptors.

The following examinations exempt, provided (a) that Latin be one of the subjects, (b) that the required subjects be taken at one examination, (c) that if any alteration be made in the regulations, character, or standard of an examination, this shall cease to apply:—

School-leaving Examination, London University.

Joint Matriculation Board of Victoria University, Manchester, and Liverpool and Leeds Universities.

Matriculation or Entrance Examination of Birmingham University and the School-leaving Examination (Senior Certificate) of that University.

Matriculation Examination, University of Wales. Examination for Senior Certificate of Central Welsh Board.

Responsions at St. David's College, Lampeter.

Local Examination of Durham University, Senior Pass Certificate and the Junior Certificate with at least second-class honours.

Responsions at Oxford.

School-leaving Examination of Oxford and Cambridge Schools Examination Board.

Articles of Clerkships.—Candidates who pass the preliminary examination, or are exempt, can enter into Articles of Clerkship. The ordinary period of service is five years, but is reduced to three years for University Graduates and Barristers of less than five years' standing, and to four years for persons who have passed the following examinations:—Moderations

at Oxford, Previous Examination at Cambridge, Examination in Arts for second year at Durham, Entrance Examination at Dublin (having passed in Honours), Matriculation or Entrance Examination at London or Birmingham Universities, University of Wales (1st Division), Responsions at Lampeter, Examination of Joint Matriculation Board of Victoria University, Manchester and Leeds and Liverpool Universities (if in 1st Division), School Examination, Matriculation Standard, London (if in 1st Division).

No person can be admitted as a solicitor before he is 21 years of age, and 16 is therefore the earliest age for entering into Articles of Clerkship.

The stamp duty on Articles is £80, and they must be enrolled and registered with the Registrar (Registration fee 5s.), within six months after execution.

In the event of the Solicitor becoming bankrupt, insolvent, being imprisoned, dying, or leaving off practice during the period of Articles, provision is made by statute for their transfer and continuity.

The most expensive item in the process of becoming a Solicitor is the premium payable upon Articles. This varies from £300 in the best offices in large towns to £100 in the small country towns. No solicitor may have more than two articled clerks at the same time. The greatest possible care should be taken in selecting the office in which Articles are to be served, as the future career of a Solicitor, who intends to take a managing clerkship or other appointment, depends to a very large extent on his having served his Articles with a Solicitor or firm of good standing and substantial practice.

Firms sometimes adopt a particular branch of work as a speciality, such as Public Companies, Commercial Life, Admiralty Work, Criminal or Divorce Business, Patents, Licensing Law, or Parliamentary work, but, broadly speaking, Solicitors are the general practitioners of the legal profession, and it is always better to be articled to a Solicitor or firm with a good general practice rather than to specialise in one particular branch, unless the clerk has some definite prospect in that particular line.

A very considerable portion of the period of service will be spent in doing office work, the larger part of which will seem humdrum, and will involve much dull routine, which will be trying even to the man who has the capacity for taking pains, and will demand from him much patience and perseverance.

Intermediate Examinations.—This examination is held four times a year—January, March or April, June, and October or November—and a fee of £6 is payable on giving notice to compete. The work selected is Stephen's Commentaries on the Laws of England, excepting Book vi, and Hughes Onslow's "Lawyer's Manual of Book-keeping." An Articled Clerk may present himself for this examination at any time after the expiration of the first year of service, but if, a year after half the term of his articles, he has not yet passed the Intermediate Examination, his final examination may be correspondingly postponed. Thirty days' notice must be given to the Secretary of the Law Society that he intends to sit for the examination.

Graduates in Law of Oxford, Cambridge, Dublin, Durham, London, Victoria, Leeds, Liverpool, and the

University of Wales, and all who have taken Honours in Jurisprudence at Oxford or Law Tripos at Cambridge are exempt from the Law portion of this examination; and Barristers of five years' standing, are exempt from the whole Examination.

This examination should be passed by any student of average ability by reading two or three hours a day for a period of from four to six months, with the knowledge he has acquired in the course of his office work.

Service in London.—In order that the Articled Clerk may be thoroughly familiar with the practice of the High Court, it is usual for those articled in the country to serve one year, if possible, in the office of the London Agent, and it is advisable for this to be spent after, rather than before, passing the Intermediate Examination; for the more advanced a man is in legal knowledge, the more beneficial will be the experience gained in a big London office.

Final Examination.—Final examinations are held each year in January, March or April, June, and October or November. Candidates, whose articles expire between January 10th and April 15th, may sit at the January examination, between April 14th and May 22nd at the April examination, between May 21st and November 2nd at the June examination, and between November 1st and January 11th at the November examination. Candidates cannot be examined earlier than these dates, but may sit at any later date. Forty-two days' notice must be given of intention to sit.

The fee payable is £10.

The subjects for the final examination are :—

1. The Principles of Law and Real and Personal Property, and the Practice of Conveyancing.
2. The Principles of Law and Procedure in Chancery matters.
3. The Principles of Law and Procedure in King's Bench matters, and the Law and Practice of Bankruptcy.
4. The Principles of Law and Procedure in Probate, Divorce, and Admiralty matters, Ecclesiastical and Criminal Law and Practice, and proceedings before Justices of the Peace.

The final examination is a stiff one, but can be passed by a candidate on his own reading.

There is a Voluntary Honours examination in the same week as the final examination. An extra fee of £1 is payable.

Studentships.—The Law Society have recently founded Studentships to be held by intending Solicitors on condition of pursuing a course of study approved by its Council. Those offered for 1908 are as follows :—Three of £50 for three years, open to those who are under 19, but have not yet been articulated; three of £50 for three years open to articulated clerks who have still three years (University Graduates, two years) to serve; and two of £40 for two years, open to articulated clerks who have still two years to serve. There are also various prizes and scholarships in connection with the Honours Examination.

Fees Payable after passing Final Examination.—After passing the final examination, an Admission Certificate bearing a revenue stamp of £25 must be left at the Society's Offices with the Final Examination Certificate, the Articles of Clerkship, and a fee of £5 payable to the Society. The Certificate is forwarded to the Master of the Rolls, and the applicant's name is then entered upon the Roll of Solicitors.

Before commencing to practice a Solicitor must take out a certificate, and this must be renewed every year. The fees payable are:—

For practice within 10 miles	{	£4 10s.	per ann.	for first 3 years
of the G.P.O., London ...	{	£9	„	afterwards
For practice outside that	{	£3	„	„ first 3 years
radius ...	{	£6	„	afterwards

Possible Emoluments.—The young Solicitor, who is not fortunate enough to have a partnership or practice to step into after admission, usually endeavours to obtain a post as managing clerk to some Solicitor or firm of Solicitors. The salaries vary from £100 or £150, rising to £300 or £400 a year, and, in a few big firms, they may ultimately reach £600 to £800 a year.

Very valuable experience is gained by having the management of a business under supervision with a salary which is net income, rather than having to provide offices, clerks, &c., which may take all the professional earnings for some years. Such a position may also lead to a partnership or public appointment.

A business connection and a certain amount of capital are necessary to enable a Solicitor to set up on his own account, if he is to make an income at his profession from the start. Without such business connection a considerable amount of hard work, time, and money will have to be expended before a satisfactory practice can be built up.

Partnerships and practices are often advertised for sale, but it is seldom that a really sound practice, or share of one, can be procured by a mere money payment.

There are numerous public appointments open to Solicitors, such as those of Solicitor to the Government Departments, Master of the Chancery Division, Taxing Master, Chancery Registrar, District Registrar, County Court Registrar, Town Clerk, Clerk of the Peace, Clerk to the County Council, Magistrates' Clerk, Clerk to Guardians, Vestry Clerk, &c. Previous experience is necessary for most of these offices, and can best be gained by serving articles with a Solicitor holding one of such offices, or by being a clerk in such an office, for in most cases special training in that particular branch is essential.

The average professional income of a Solicitor in good practice may reach the substantial sum of £1,500, or even £2,000, in a few years, but large incomes derived from practice are the exception and not the rule, and it is only in the most important firms that they rise to what may be considered the maximum of about £5,000 per annum.

Select list of Public Schools (of which further particulars are found in Appendix IV):—

Durham School.	Plymouth College.
Sedbergh School.	Monmouth School.
Eastbourne College.	Dover College.
Bromsgrove School.	Brighton College.
Giggleswick School.	Dean Close School,
Trent College.	Cheltenham.
King's School, Canterbury.	Grantham School.
King's School, Rochester.	Kendal Grammar School.
St. Lawrence College,	Leighton Park School.
Ramsgate.	Windermere Grammar
Christ College, Brecon.	School.
	Carlisle School.

VI.—THE CIVIL SERVICE.

Introductory.—The Civil Service offers a wide variety of employment. In its higher departments, viz., Clerkships (Class I), India Civil Service, Eastern Cadetships and the three other Indian Services—Police, Forest, and Public Works—it especially appeals to University and Public Schoolmen; in its subordinate departments, viz., the Second Division Clerkships, it also demands from all intending candidates a sound and thorough education. In the higher branches there is ample scope for individuality and initiative and administrative ability, for a great Pro-consul like Lord Cromer was a Civil Servant. In the less onerous departments there is an assured increasing income, and the certainty of a pension, the intellectual demand, although thorough, is not severe, while quiet, steady work is certain of its reward. These are the advantages to which the successful candidate may look forward: on the other hand, these subordinate departments of the service do not offer the same chances of a great position or of a big income as are offered in the more hazardous fields of commerce or professional life. It is true that Second Division Clerks may succeed, by merit, in obtaining First Division Clerkships. The barrier between the two Divisions is not nearly so impassable as it once was. Many such promotions have been

made, and it is probable that they will become more numerous in future. During the years 1886—1898, the total number of promotions from the Second Division or its equivalents, into Class I, or into posts with a maximum salary of £500 per annum, was no less than 178.

Practically speaking, all appointments are now open to competition, either open or limited; the exceptions are those known as nomination appointments, which consist mainly of Clerkships in the Houses of Parliament, Assistantships in the British Museum, and Foreign Office Clerkships, and the Inspectorships under the Boards of Education for England, Scotland, and Ireland, for all of which influence is necessary to obtain a nomination. There are also a number of appointments—many very valuable—which are filled by the Civil Service Commissioners, wholly or partially without examination, on evidence satisfactory to them that the candidate possesses the requisite qualifications. For a list of such appointments Section II (a) (b) and (c) of the Civil Service Year Book should be consulted.

Main Divisions of the Service.

First Division (or Class 1) Clerkships, the Indian Civil Service, and Eastern Cadetships in the Colonial Service.

A youth who is aiming at these higher posts should remain at a Public School until he is 18 or 19, and then proceed to the University. Distinct ability and a first-class training are essential for success, and on the whole "the all-round man" has a better

chance of a high place than the man who is only good at one subject. The age of candidates must be between 22 and 24, and the object of this regulation is doubtless to secure candidates who have had time to complete their career at a University. Oxford and Cambridge men still form the majority of the successful candidates, and Oxford has a larger proportion of successes than Cambridge, but graduates of London, Edinburgh, and Dublin also find good places.

Second Division Clerkships.

These are within the reach of any candidate with a good general education and average ability. The age limit is 17 to 20. As the competition is keen, parents should see that their sons are being educated at well-equipped, well-staffed, and efficient schools. For all appointments good clear handwriting is of the greatest importance, and candidates must give it their most careful attention. The scope of the examination has been widened of late years, and this is to the advantage of a candidate whose education is fairly wide as well as sound. Hence the crammer (whose services at one time were necessary to secure mechanical accuracy in a limited number of subjects) is, in the majority of cases, no longer necessary, for the Civil Service Commissioners do not want a hot-house product, but one that has developed quietly and steadily in the healthy atmosphere of a good school.

Boy Clerkships.

These are open to boys over 15 and under 17, who are generally engaged in London, Edinburgh, or Dublin, in the Savings Bank Department of

the General Post Office, the Inland Revenue, Board of Trade, Admiralty, and other offices. A boy clerk commencing his career at the age of 15, may, by showing perseverance, energy, and tact, and working hard in his leisure hours in order that he may successfully compete in the necessary examinations, pass through the stages of Assistant Clerk (a grade which is open only to boy clerks) at 19, Second Division Clerk at 25, First Division Clerk at 33, and up to Chief Clerk while under 50 years of age, or he may advance still more rapidly by successfully passing the open competitive examination for a Second Division Clerkship at 17, with the chance of obtaining a First Division Clerkship at 22, a Chief Clerkship while under 40, with the glorious but distant possibility of being Permanent Under-Secretary of State of his Department while under 45 years of age.

It often happens that a boy clerk,* whose home is in the provinces, is appointed to an office in London (or possibly Edinburgh or Dublin) and that his parents have no relations or friends with whom he can reside to be near his work. This might necessitate his living in lodgings or a boardinghouse, and the age of 16 is rather young for a youth to be left to find his own residence and live practically alone. It may therefore interest parents to learn that an unofficial association has been formed by civil servants of the higher ranks, having representatives in every office employing boy clerks, in order to give advice and assistance to their youthful colleagues whenever it is needed.

First and Second Division Clerks are employed in nearly all the Government Offices, and, in addition to these, the Customs and Inland Revenue Departments both offer many excellent opportunities of rising to a good position, as will be seen on reference to the detailed particulars of the various posts set out later. Candidates for the Civil Service may also begin their career by entering the Post Office, and, by working hard and intelligently, gradually rise to the higher departments of the Service, for they receive an age allowance when competing for the various appointments, which is a decided advantage.

We will now give briefly the chief particulars concerning these three Divisions, taking the last Division first, dealing afterwards with the Inland Revenue, Customs, and Post Office Departments, and certain appointments in the Colonial Services. For more complete information parents are referred to the Civil Service Year Book.

(a) Boy Clerkships.

Boys of good health and character, between 15 and 17 years of age, attaining at least the qualifying standard (about 50 per cent.) in the competitive examination, are placed upon the Register of Boy Clerks, and are summoned for employment in any of the Public Departments as their services are required, and paid according to a fixed scale. Competitive examinations are held at some eight centres in England, Scotland, and Ireland, as vacancies arise, but Boy Clerks are employed almost exclusively in London.

The entrance fee for the examination will in future be 10s., and the following are the subjects:—

1. Handwriting and Orthography.
2. Arithmetic, including Vulgar and Decimal Fractions.
3. English Composition.
4. Copying Manuscript.

And any two of the following:—

5. Geography.
6. English History.
7. Translation from Latin.
8. Translation from French.
9. Translation from German.
10. Mathematics:—The subject matter of Books I and II of Euclid's Geometry, and Algebra up to, and including, Simple Equations.
11. The rudiments of Chemistry and Physics.

Handwriting and Orthography are of the utmost importance in this examination. No subjects are obligatory, but the qualifying number of marks must be obtained.

Salaries—The commencing salary is 15s. per week, rising by annual increments of 1s. to 19s. per week of 39 hours. Boy Clerks are not retained, as such, in the Service, after they have reached the age of 20

Assistant Clerkships.

The post of Assistant Clerk is open only to Boy Clerks (or Boy Copyists) who have served two years, if they started before 17½ years of age, or one year if they commenced after that age. Candidates must be between 19 and 21 years of age.

The entrance fee for the examination is 10s, and the subjects are:—(1) English Composition, including Handwriting and Spelling. (2) Arithmetic. (3) Digesting Returns. (4) Précis and Indexing. (5) Book-keeping or Shorthand.

“Digesting Returns into Summaries” is of great importance in this examination: it is really a compound exercise in handwriting and arithmetic, and the greatest possible care must be taken to secure accuracy and neatness.

Salaries—The commencing salary is £55 a year, rising by annual increments of £5 to £150 per annum, subject to a special certificate of efficiency at £100. For special merit, an Assistant Clerk may be promoted into the Second Division after not less than six years' service, and he is also entitled to the usual age allowance of not more than two years in the open competition for such clerkships. Assistant Clerkships, in themselves, are not valuable appointments, but they are useful as stepping stones to higher places.

(b) Second Division Clerkships.

As many as 3,500 Second Division Clerks are now employed in the various Government Offices. The entrance examination fee is £2, and the examination is open to all natural-born subjects of His Majesty

between 17 and 20 years of age. Two years may be deducted from the ages of candidates who have served at least two full consecutive years in the Civil Service or as Boy Clerks, but they must have written permission from the head of their department to compete. Examinations are held, as occasion requires, generally about twice a year, and the number of appointments made after each varies from 70 to 150.

The subjects are now as follows :—

- (1) Handwriting and Orthography, including Copying Manuscript.
- (2) Arithmetic.
- (3) English Composition.
- (4) Précis, including Indexing and Digest of Returns.
- (5) Book-keeping and Shorthand Writing
- (6) Geography and English History.
- * (7) Latin
- * (8) French
- * (9) German
- } Translation from the language and composition.
- (10) Elementary Mathematics.
- (11) Inorganic Chemistry, with Elements of Physics

[Not more than four of the subjects numbered 4 to 11 may be offered.]

No subjects are stated to be obligatory : in reality, however, all that are permitted to be taken under the Regulations are obligatory, as a candidate who omitted any one of them would have but small chance of success.

* Only two of these languages may be taken up.

Salaries.—The commencing salary is £70, increasing by £7 10s. annually to £130, and thence by £10 to £200, and again by annual increments of £10 to £300 per annum: a special report as to fitness and ability is required before a clerk passes beyond £130 and £200. When the salary of £300 has been reached, the next step is a Higher Staff Clerkship (£250—£350), if such exists in his office. The Higher Grade scale will be confined to such existing Second Division Clerks as elect to remain on the old scale. Staff appointments in most of the Government offices are specially reserved for Higher Grade Clerks of the Second Division, the salaries varying from £300 to £500 per annum. After eight years' service, Second Division Clerks may also be promoted to First Division (or Class 1) Clerkships.

(c) First Division (or Class 1) Clerkships.

These are the principal clerkships in the Higher Establishment of the Civil Service and in nearly all the Government offices. The examination is held annually in August jointly with the India Civil Service and Eastern Cadetship competitions: identical papers are set for all three competitions, and the entrance fee of £6 admits a candidate to all or any of the competitions.

Candidates for all three examinations must be between 22 and 24 years of age, but the limit is extended to 26 for those holding a situation obtained under the certificate of the Civil Service Commissioners.

The subjects of examination and marks obtainable are now as follow:—

	Max.		Max.
English Composition	500	Natural Science,* a.e., any number not exceeding four of the following:—	
Sanskrit Language and Literature	600	Chemistry	600
Arabic	600	Physics	600
Greek, not less than two subdivisions, of which one must be translation:—		Geology	600
Translation	300	Botany	600
Composition	300	Zoology	600
Literature, etc.	300	Animal Physiology	600
Latin, not less than two subdivisions, of which one must be translation:—		Greek History (Ancient, including Constitution)	500
Translation	300	Roman History (Ancient, including Constitution)	500
Composition	300	English History—Either or both sections may be taken:—	
Literature	300	I. to A.D. 1485	400
English	600	II. A.D. 1485 to 1848	400
Italian	600	General Modern History	500
French	600	Logic and Psychology	600
German	600	Moral and Metaphysical Philosophy	600
Mathematics	1,200	Political Economy and Economic History	600
Advanced Mathematics	1,200	Political Science	500
		Roman Law	500
		English Law	500

The marks assigned to candidates in each branch (except in Mathematics and English Composition) are subject to deduction at the Commissioners' discretion—usually about one-fifth of the maximum. The remainder is then raised by a certain proportion, and the results appear as the marks gained. This is done to secure that a candidate gets no credit for a smattering of any subject. An important provision was introduced in 1906, limiting the choice of subjects by candidates: under the new regulations, candidates can choose their own subjects, "with the proviso, that the

*After 1908, Geography, treated scientifically, will be added to the list of subjects included under this head.

maximum number of marks that can be obtained from the subjects chosen is limited to 6,000. If this maximum is exceeded by a candidate's selection he will be required to indicate one of his subjects the marks for which should, in his case, be reduced so as to bring his maximum marks within the prescribed limit. The marks so reduced will be subject to a correspondingly reduced deduction." It will thus be seen that the Commissioners have gone a step further in the direction of discouraging the smatterer.

Under the new Regulations the pure classical scholar is no longer at so great an advantage as before. Classics and Ancient History now count for some 2,800 marks, while Science can score 2,400, and Mathematics also 2,400. In the other subjects necessary to make up the 6,000 maximum, all three classes of students meet on neutral ground, so to say. At present, the older Universities still hold pride of place, with a fair proportion of successful candidates from the Scottish Universities. As the number of subjects is now limited, the candidate's knowledge of his selected subjects will have to be deeper and wider than ever. As regards the "crammer," it will probably be found that his services as a teacher, to a University man, will not be required, but there is no doubt that a little guidance from an expert is of value, especially in those subjects which have not been thoroughly studied at the University, or in any subjects (outside the University curriculum) for which a candidate may have a taste or natural aptitude.

Prospects and Emoluments.—Successful candidates are called upon immediately after the announcement of the results to choose the service for

which they desire their names to be entered, but an option is given of waiting for a vacancy instead of accepting an unsuitable appointment. As vacancies occur (within a limited period) they are offered in rotation to qualified candidates then on the list.

(A.) *Home Appointments*.—These include Clerkships in the Treasury, Home Office, War Office, Colonial Office, India Office, Admiralty, and numerous other offices, and all offer excellent prospects. The commencing salary varies (according to the office) from £150 to £200 per annum, and increases by annual increments of £15 or £20, to £300, £500, or £600 a year, and on promotion to a higher grade of £900 to £1,000 a year. This latter salary is attainable on reaching the age of 50, with further chances of promotion to Permanent Secretaryships, worth £2,000 a year or more. In choosing (where choice is given) into which office a successful candidate will go, it will be advisable, when possible, to consult some friend already in the service, or any one who may have special knowledge of the conditions of employment, or prospects of promotion in the particular offices under review.

(B.) *Civil Service of India*.—Selected Candidates before proceeding to India, are on probation for one year, and those who pass their probation at one of the Universities or Colleges approved by the Secretary of State for India, receive an allowance of £150. During the year candidates are tested as to their proficiency in riding. At the end of the period of probation they are examined in the following subjects:—Indian Penal Code: Code of Criminal Procedure: Indian

Evidence Act: Indian History: and the principal vernacular language of the Province to which the candidate is assigned. These subjects are compulsory, and, in addition, candidates are allowed to select one of the following five optional subjects:—Hindu and Mohammedan Law; Sanskrit; Arabic; (these two if not taken at entrance examination); Persian; and Chinese (for candidates assigned to the Province of Burma only). A candidate who fails at this final examination cannot be re-examined. Seniority in the Civil Service of India is determined by the order in which candidates stand on the list resulting from the combined marks of the open competition and the final examination.

It is not too much to say that the reputation of the I.C.S. stands as high as that of any Service in the world. The conditions as to leave, pensions, etc., are generous. The commencing salary is about 400 rupees per mensem, *i.e.*, £300 per annum, reckoning the exchange value of the rupee at 1s. 4d., the increase in salary is rapid and may rise to £2,400, or even more, the leave earned is about one-fourth of active service, and the prospects of advancement is practically unlimited, and there is a retiring annuity, after being 25 years in the service, and giving 21 years' active service, of £1,000.

As regards the pay of the higher posts, it may be stated that the man of ability rises to be a Commissioner (say 35,000 rupees per annum), or a District and Sessions Judge (30,000 to 36,000 Rs. per annum). The prizes of the Service are in the Executive line, (1) Lieutenant Governorships (100,000 Rs.), (2) Memberships of Council (some at 80,000 Rs.)

(3) Memberships of Revenue Board (48,000 Rs.),
 (4) Secretaryships (30,000 to 48,000 Rs.) In the
 Judicial lines the high posts are High Court Judge-
 ships (42,000 to 60,000 Rs.)

(C.) *Eastern Cadetships.*—These were established to supply the Civil Service of Ceylon, Hong Kong, the Straits Settlements, and the Federated Malay States. Successful candidates are allowed to indicate the Colony or Dependency they would prefer, but the final allotment rests with the Secretary of State for the Colonies. Before receiving a permanent appointment, Cadets attend at the Government Offices for part of the day, and also study the language of the country to which they are to be sent. They have to pass in the language required and generally in Law, and Colonial Regulations and Orders, before receiving promotion. The salaries are somewhat as follow:—Ceylon, 3,000 rupees per annum and allowances, up to 18,000 rupees per annum; Hong Kong, £225 up to about £1,600 a year; Straits Settlements and Malay States, as for Hong Kong, with maxima of £1,700 a year in the Straits Settlements and £2,260 in the Malay States. There are generous conditions as to leave, pensions, etc., in connection with these appointments.

Inland Revenue Department.

Assistant Surveyors of Taxes.

The limits of age are 19 to 22, the entrance fee for examination £6. Examinations are held about once a year and the subjects are:—

- (1) English Composition, including Spelling and Handwriting.

-
- (2) Arithmetic.
 - (3) Accountancy, including Book-keeping by Double Entry.
 - (4) Political Economy.
 - (5) Law of Evidence.
 - (6) Latin, Translation and Composition.
 - (7) French, Translation and Composition.
 - (8) German, Translation and Composition.
 - (9) Geography and English History.
 - (10) Geometry—the substance of Euclid, Books I to IV, and VI; and Algebra, up to and including the Binomial Theorem.

Of the subjects numbered 6 to 10, not more than three may be taken. The maximum marks for each of these subjects will be the same. Of the subjects 6, 7, and 8 not more than two may be taken.

Proficiency in Higher Mathematics is very important, and decided proficiency in English Composition most useful. The stumbling blocks for most candidates would be Political Economy and the Law of Evidence, and good works on these subjects should be thoroughly mastered.

Salaries.—The commencing salary is £100, rising by annual increments of £10 to £180, and, on appointment as Fourth Class Surveyor, commencing at £200 and rising by annual increments of £12 to £380, and from £430 as Third Class Surveyor, by £15 to £550. Second Class Surveyors have a fixed salary of £600, and the salary of the First Class is £620—£20—£700.

*Clerkships of the First Division in the
Estate Duty Office.*

The limits of age for these posts are 21 to 27. Candidates must have passed the final examination of the Incorporated Law Society of England or Ireland or have qualified as a member of the Society of Writers to the Signet, or passed the final examination before the Board of Examiners of Law Agents in Scotland, before being eligible to compete in the examination which qualifies them for these clerkships, and the cost of preparation is therefore very heavy.

Salaries.—The salary is now £150, rising by £15 to £300, and thence, subject to favourable report, by £20 to £500. There are also certain staff appointments with salaries in excess of £500, for which these clerks are eligible.

Some of these appointments have recently been filled from qualified candidates on the list for Class I Clerkships, and it is probable that a certain proportion of vacancies may again be filled in like manner.

Assistantships of Excise.

These are among the most attractive posts in the out-door department of the Civil Service. They have a fair commencing salary and good prospects of advancement, while various "allowances" help to increase the ordinary salary. The age limit is 19 to 22, with the usual exceptions as to extension for acting Civil Servants. Candidates must be unmarried and without family, and of good health and good character.

Examinations are now being held twice a year, in May and November, the entrance fee is £1 and the subjects are:—

1. Handwriting.
2. Arithmetic.
3. English, Composition and Spelling.
4. Geography (General).
- *5. English History from A.D. 1485.
- *6. Mathematics.
- *7. Elementary Chemistry.

No subjects are obligatory, but candidates must show an adequate amount of general proficiency, an all-round total of rather more than half marks being usually sufficient to meet this requirement.

Successful candidates have to undergo a period of about six weeks' training and instruction in a brewery and afterwards in a distillery, under the supervision of an experienced Excise Officer, as soon as possible after the examination, in order to gain the necessary experience before actually entering upon duty.

Salaries.—The salary is £50 per annum, rising by £5 to £80, but when actively employed, the officer gets an officiating allowance of 2s. per day (including Sundays). At the end of one year after the salary of £80 is attained, the allowances cease, and he becomes a second class officer, salary £115, rising by £7 10s. per annum to £160, with an allowance of £40 for a horse, if required, and a subsistence allowance of 7/6 a week when away from home, and travelling

*Any two, but not more than two.

expenses, if required in lieu of the allowance for the horse. On promotion, in order of seniority, to First Class Officer, the salary is £180 by £7 10s. up to £210, and thence by £10 increments to £250. After two years' service in the First Class, it is possible to pass a special examination and to become an Assistant Supervisor, with a salary of £250 a year, with an additional £25 a year if able to reside at home, or £75 a year if compelled to reside elsewhere. As vacancies arise, Assistants are appointed Second Class Supervisors, with salary £280—£10—£320, with £55 for a horse, if required, or else a subsistence allowance up to 20s. a week. First Class Supervisors commence at £340 and rise by £15 to £400. By a further examination, promotion can be obtained to Second Class Inspector, salary £450, and from the ranks of Second Class Inspectors are appointed Collectors, with salaries varying from £500 to £800 a year.

The Customs Department.

This is one of the most extensive and important departments in the Civil Service, consisting of (1) In-door and (2) Out-door establishment.

(1) In-door Establishment.

In this, Class I Clerks, Second Division Clerks and the following additional Clerks are employed:—

Tabulators in the Statistical Department.—These posts are limited to boy clerks, who must pass the same examination as for the post of Assistant Clerks (see page 161.) The entrance fee is 10s. The salary is £55 rising to £150.

Port Service Clerkships.—Age, 17 to 20. The subjects of examination are similar to those for Second Division Clerkships, but candidates may take 8 subjects. If both examinations are taken at the same time, the fee is £3. The salary commences at £70, rising by £5 for four years, and then by £10 to £200; and on promotion to the upper section to £300. On promotion (by merit) to the grade of First Class, the salary is £320—£15—£400, and above these are Principal Clerks, whose salaries are £420—£15—£500. By displaying exceptional tact and ability, promotion may be obtained to the post of collector, with a salary varying from £600 to £1,200 per annum.

(2) *Out-door Establishment.*

This consists of two branches:—

- (a) Landing and Warehousing Staff.
- (b) Waterguard and Preventive Staff.

(a) *Landing and Warehousing Staff.*—This consists of (1) Assistants of Customs, (2) Examining Officers, (3) Surveyors, (4) Inspectors, and (5) Surveyors General.

(1) *Assistants of Customs.*—Age limit 18 to 21. Candidates must be unmarried and without family; they must be at least 5ft. 4in. in height, with chest measurement up to the normal standard corresponding with height; any defect of vision will disqualify, and any candidate who has not been vaccinated within seven years, must be re-vaccinated before appointment. The entrance fee for examination is £1. Successful candidates have to serve a probation

of 12 months, and must serve two years before competing for any other Civil Service appointment

The subjects of examination and marks obtainable are:—

	Marks
(1) Handwriting	400
(2) Arithmetic	800
(3) English Composition (including Orthography)	800
(4) Geography (general)	400
(5) Digesting Returns into Summaries	400
(6) Copying M.S. (to test accuracy) ..	400

Salaries.—Assistants of Customs commence with a salary of £70, rising by annual increments of £5 to £105, with promotion to 2nd Class Examining Officer by seniority, and to 1st class, subject to a test examination in departmental business.

(2) *Examining Officers*—(a) 2nd Class, (b) 1st Class. These posts are filled by promotions of Assistants of Customs, who have attained the maximum salary of that grade, 2nd Class by seniority, and 1st Class, after a departmental examination.

Salaries.—Second Class Officers are paid £110—£7 10s.—£220, and First Class £230—£10—£340

(3) *Surveyors of Customs*—These are selected from the Senior Examining Officers for good character and special fitness. Their salaries are:—Third Class Surveyors, £350 to £420, Second Class £430 to £480, and First Class £490 to £550.

(4) *Inspectors of Customs*—There are seven Inspectors in the Port of London, promoted from other ports, with salaries of £600 to £650 a year.

(5) *Surveyors General*.—These officials are promoted from the staff, and are engaged in the general work of inquiry, supervision and inspection of accounts at all ports. Their salaries range from £800 to £1,000 a year.

It will thus be seen that an Assistant of Customs, by displaying energy, ability and tact, has the opportunity of rising to one of the highest posts in the Customs Department.

(b) *Waterguard, and Preventive Department*.—Candidates must be between 17 and 20 years of age, 5ft. 4in. in height, and of chest measurement not below the normal standard according to height. The appointments are in the gift of the Treasury, and obtainable through the influence of Members of Parliament or other persons. There is a qualifying examination in (1) Reading (Print and M.S.), (2) Writing from Dictation, (3) The first four rules of Arithmetic, with the various weights and measures. If this be done the candidate will become a Customs Boatman at a salary of £55, rising by annual increments of £1 10s. for five years, and then by £2 10s. up to £85, with the opportunity of rising to the post of Preventive Officer at a salary of £95, increasing after two years by £5 annually to £150. Above these come Preventive Officers (upper section) with salary of £160 to £200; Chief Preventive Officers, £240 to £400; Preventive Surveyors, £350 to £420; Assistant Inspectors £450 to £550, and the principal post of Inspector from £600 to £650 a year.

General Post Office.

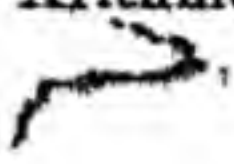
Male Learners.—Age 15 to 18 ($14\frac{1}{2}$ —18 in Edinburgh, Dublin, and some other towns). Height, on examination, 5 feet: not retained in the service unless 5 feet 4 inches before end of 19th year. Entrance fee, 4s., after June 30th, 1908, 5s. Subjects of examination:—

- (1) English Composition (including Writing and Spelling).
- (2) Arithmetic (Vulgar and Decimal Fractions, Metric System).
- (3) Geography (general).

Learners have to undergo a period of instruction, and when qualified, are promoted to sorting clerks, telegraphists, etc. For fuller details of work and salary, see the Civil Service Year Book, Section I (b).

Male Sorters.—Age, 18 to 21 (with service allowance). Height, 5 feet 4 inches. Subjects of examination, fee, etc., as for Male Learners. Commencing salary 18s. per week, until 19 years of age. then 20s. a week, with annual increments of 2s. 4d. a week up to 44s. a week, with possibilities of rising to a maximum of 62s. a week.

Clerks in Supplementary Establishments and other Departments.—Ages 19 to 26. Limited to those who have served at least two years in the Post Office. Fee £1. Subjects of examination:—
(1) English Composition (including Writing and Spelling), (2) Arithmetic (general), (3) Geography



(general), (4) Any two of Latin or French or German ; and any two of the following : (5) English History, (6) Mathematics, (7) Shorthand.

Salaries.—Supplementary Clerks in the Secretary's Office commence with a salary of £80, rising by £10 to £200, and then through grades to £400.

Junior Clerks in the Superintending Engineers' Office, London, receive salaries of £75 rising by £6 to £100, and then by £7 10s. to £200.

The salaries of clerks in other departments commence at £80, rising by £7 10s. to £200, with prospects of promotion to higher appointments, with varying maximum salaries.

Postmasterships.—Success in the departmental examinations and, also, nomination are necessary to secure these appointments, particularly in the large towns and cities where the salaries vary from £400 to £1,000. In smaller places the annual salary varies from £100 to £400.

Patent Office.

Assistant Examiners.

These are clerks engaged in examining the specifications and other documents submitted to the Patent Office by applicants for Patents. Examinations are held from time to time to fill these posts. The age limit is 20 to 25, and the subjects are chiefly scientific: a candidate must be really proficient to have even a chance of success. Thus they would appeal to those whose education is very strong on the side of science.

Salary.—Commencing at £150 a year, rising by annual increments of £15 to £450, with prospect of promotion to Deputy Examiner, £400 to £550; to Examiner £550 to £700; and to Supervising Examiner £700 to £800.

The subjects for examination are:—(1) English Composition, (including Spelling and Handwriting), (2) Geometry (Plane and Solid), (3) Mechanics and Mechanism, (4) Chemistry, (5) Electricity and Magnetism, (6) General Physics. Hydrostatics, Heat, Light, and Sound, (7) French or German (translation from).

No subjects are obligatory, but candidates must obtain a satisfactory aggregate of marks on the whole, generally about one-half. Examination fee, £5.

Exchequer and Audit Department.

Examiner.

These clerks are employed in audit work in London or at any of the home stations where the audit of accounts is conducted; there are also audit stations abroad, to which appointments are made by selection, and which, in some cases, carry special allowances. Rather a large proportion of the whole staff is in the Junior Class, which limits the range of promotion, but the rates of pay and prospects are considered better than those of the Second Division Clerk generally.

Salaries.—Commencing £100, after two years' probation £120, by £10 to £200, and by £15 to £350, with prospects of promotion to Chief Examiner £350—£15—£500, to Senior Clerk £550—£20—£700, and Principal Clerk £775—£25—£900.

The regulations and subjects for examination will in future be the same as for the Junior Appointments in the Admiralty and War Office: see next section.

Admiralty: Junior Appointments in Supply and Accounting Departments.

War Office: Army Accounts Department.

These appointments are a slight improvement on the ordinary Second Division Clerkships, and they differ therefrom in the fact that a certain proportion of the holders are called upon to serve abroad. In that event, they are provided either with official residences, or with allowances in lieu thereof, and they also receive colonial allowances, where necessary, to meet the increased cost of living. The salaries begin at £100, rising after two years to £120, then by £10 to £200, and by £15 to £350. There are a very fair number of well-paid appointments to which beginners may reasonably aspire to attain. The limits of age are 18 to 19½. The examination fee is £3, and the subjects of examination are the same as those for Examiners in the Exchequer and Audit Department, and are given below:—

CLASS I.	Marks.	CLASS III.	Marks.
Mathematics I	2,000	(Higher Standard.)	
English	2,000	Mathematics III	
CLASS II.		French	
(Lower Standard)		German	
Mathematics II		Latin	
French		Greek	
German		History (English and	
Latin		European)	
Greek		Chemistry	
History (English)		Physics	
Chemistry			
Physics			

2,000
each.

4,000
each.

Both the subjects in Class I must be taken. No candidate will be eligible who fails to qualify in Arithmetic and English Composition. From Classes II and III candidates may select subjects, one of which must be a language, carrying marks up to a maximum of 10,000, making with Class I, 14,000 in all. The same subject may not be selected both in Class II and Class III. Mathematics II cannot be taken with Mathematics III, nor English History with "English and European History."

Technical Posts in the Home Civil Service.

There are a number of appointments, many well paid, for which special technical knowledge is required. A list of these will be found in the Civil Service Year Book, Section I (a), and details (e.g., Factory Inspectors, &c.) in Section II (b).

Indian and Colonial Services.

Besides the India Civil Service and the Eastern Cadetships, already dealt with, there are other services, which offer a career to a youth who is willing to go abroad. Some of these are open to competition, and particulars are given below.

Indian Forest Service.

These appointments are available only to those who can afford the expense of a period of special training lasting about three years. Those who can afford the expense, and are physically fit for service in India, will find the Forest Service an attractive one, the duties being interesting and important, and the salaries good.

The examinations are held as required, and are advertised as usual in the Government organs.

We give in detail the Regulations for 1908 as a guide to the character of the appointments, but we would add that the Secretary of State in Council has intimated that they will be the subject of further consideration in 1909, and that announcements will be made concerning them in due course.

Regulations for 1908.

1. *Appointments.*—The Secretary of State for India in Council will, in the summer of 1908, make not less than sixteen appointments of Probationers for the Indian Forest Service, provided that so many candidates are considered to be in all respects qualified.

In making these appointments, he will act with the advice of a Selection Committee.

2. *Applications for Appointment.*—Applications for appointment must be made on a printed form to be obtained from the Secretary, Judicial and Public Department, India Office, Whitehall, London, S. W., and to be returned to him not later than Wednesday, the 1st July, 1908.

3. *Age Limits.*—Candidates must have attained the age of 18 years on the 1st July, 1908, and not have attained the age of 22 years on the 1st January, 1908.

4. *Nationality, &c.*—Every candidate must be a natural-born British subject. He must be unmarried, and if he marries before he reaches India he will forfeit his appointment.

5. *General Qualifications.*—Candidates must bring evidence, for consideration by the Selection Committee, to show that they have received a good general education.

Note.—This should be understood to include, at the least, a fair knowledge of English Composition, Mathematics—up to and including Plane Trigonometry,—Latin, and either German or French. A knowledge of Greek is not necessary, but is left to the option of the candidates.

The production of School Certificates granted by the examining authorities of Universities, or of certificates that a candidate has passed the Matriculation Examination of a University, in the

subjects named, or of other certificates held by the Secretary of State in Council to be equivalent, will be taken to show that candidate satisfies the requirements of this clause.

6. *Special Qualifications Desirable.*—It is also desirable that candidates should possess a knowledge of chemistry, and also of mechanics and physics, as indicated in the appended syllabus.

If any candidate be selected for appointment who does not possess a knowledge of inorganic chemistry, he will be required to pass in it before the beginning of the Oxford Hilary Term, 1909, which commences on the 18th January of that year.

7. *Medical Examination.*—Those candidates who are selected as Probationers will be required to undergo a strict examination by a Medical Board at the India Office, at which particular stress will be laid on good vision and hearing.

On passing this medical examination candidates will be deemed to be Probationers for the Indian Forest Service.

8. *Period of Probation.*—The period of probation will ordinarily extend over about three years. For the first two years the Probationers will be required to undergo a special course of study at Oxford and to become members of the University if not so already. During the third year of their probation they will receive practical instruction, visiting under suitable supervision such Continental forests as may be selected for the purpose. Excursions may also be made for purposes of study during the first two years, both in term-time and in the vacations.

9. *Shortened Probation in certain cases.*—In the case of any Probationer who has passed with Honours in a public examination in Natural Science held by a University in Great Britain or Ireland, the Secretary of State in Council reserves power, should he think fit, to sanction the reduction of the period of probation to two years instead of three, under such conditions as may be determined.

10. *Charges.*—The Probationers will be required to defray all expenses for lodging, board, tuition, and excursions within the limits of the United Kingdom which they may incur during the period of their probation at Oxford. To meet the cost of practical instruction on the Continent, each Probationer will be required to pay the sum of £180, in such instalments as may be determined from time to time.

Note.—Ordinarily a sum of £20 will be due on the 15th June of the first year, and the balance in three instalments during the third year. In the case of Probationers whose term of study has been reduced (see paragraph 9), the payments must be made during the two years, as may be required.

11. *Course of Study.*—The prescribed course of study for the Probationers comprises the following subjects:—

I.—*Subjects auxiliary to Forestry.*

- (1) Chemistry of soils and Elementary Organic Chemistry.
- (2) Geology.
- (3) Elements of Zoology and Forest Entomology.
- (4) Botany.
- (5) Geometrical Drawing and Elementary Engineering.
- (6) Surveying.
- (7) Book-keeping, in reference to Indian Forest Accounts.
- (8) German or French, as required.

II.—*Forestry, Theoretical and Practical, in all its Branches.*

12. *Conduct and Medical Requirements.*—Every Probationer will be required to conduct himself during the period of probation in a manner satisfactory to the Secretary of State, and to give evidence of satisfactory progress in his studies in such manner as may be required, failing which, or in the event of serious misconduct, he will be liable to have his name removed from the list of Probationers.

A Probationer may also, at the discretion of the Secretary of State, be required from time to time to appear before the Medical Board, and should the result be unsatisfactory, he will be liable to have his name removed from the list of Probationers.

13. *Diploma of Forestry, &c.*—During the period of probation, the proficiency of the Probationers will be tested by periodical examinations.

The Probationers who satisfy the Examiners in all these examinations, and complete satisfactorily the practical course in Forestry on the Continent, will receive the Diploma of Forestry of the University of Oxford. It is desirable that they should, if possible, also obtain a degree in the Honour School of Natural Science at the University.

14. *Appointment and Seniority.*—Probationers who obtain the Diploma of Forestry, and are of sound constitution and free from physical defects which would render them unsuitable for employment in the Indian Forest Service, will be appointed Assistant Conservators in the Indian Forest Department. Their position in the provincial Forest Lists will be determined by the results of the examinations held during their two years' residence as Probationers at Oxford and the manner in which they have completed the practical course on the Continent; but in making selections for the post of Conservator, officers of the same year are reckoned as equal in seniority. Probationers whose term of study has been reduced (see paragraph 9) will rank immediately below the successful Probationers of the previous year.

They will be allowed at the end of the period of probation to state their preference in respect to the provinces to which they desire to be allotted; but the distribution will be made to the several provinces according to the needs of the public service, at the discretion of the Secretary of State for India. Officers are, however, at all times liable to be transferred from one province to another at the pleasure of the Government of India.

15. *Riding.*—Every Probationer, before proceeding to India, will be required to satisfy the Secretary of State, in such manner as may be determined, of his ability to ride. It is desirable that this evidence should be forthcoming before the Probationer proceeds to the Continent for his final period of study.

16. *Articles of Agreement, &c.*—Within a month of his nomination as Assistant Conservator, each nominee must sign articles of agreement describing the terms and conditions of his appointment; he must embark for India when required to do so by the Secretary of State, and must engage his own passage. Failure to embark at the stated time will, in the absence of satisfactory explanation, lead to forfeiture of appointment.

17. *Allowance.*—An allowance will be granted to each Probationer on signature of his agreement, varying from £50 to £100, according to the degree of proficiency and diligence shown by him during his practical course upon the Continent.

18. *Salary.*—An Assistant Conservator of Forests will draw pay at the rate of Rs. 380 a month (equivalent to £304 a year, when the rupee is at 1s. 4d.) from the date of his reporting his arrival in India.

19. *Promotion, Leave, Pension, and Provident Fund.*—Promotion, leave, and pension will be governed by the Regulations laid down by the Government of India, and made applicable to Forest Officers, such regulations being subject to any modifications or alterations which may be made in them from time to time by the Government of India, and their interpretation in case of any doubt arising being left to that Government. A copy of the existing regulations can be seen on application to the India Office.

Certain information regarding appointments in the upper controlling staff of the Indian Forest Service, the pay of which has been recently improved, will be found in Appendix II; a summary of information regarding leave is contained in Appendix III, regarding Pensions and Provident Fund in Appendix IV.

APPENDIX I.

(Referred to in paragraph 6.)

SYLLABUS OF SPECIAL SUBJECTS.

I.—CHEMISTRY.

The simpler chemical and physical properties of common substances, such as lime, salt, sugar, water, air.

The preparation (excluding details of technical processes) and properties of the following substances:—

The metals, tin, lead, iron, copper, zinc, magnesium, calcium, potassium, sodium; their simpler and more important compounds, especially such as occur naturally, and such compounds and alloys as are used in the Arts.

Hydrogen, oxygen, water, ozone, hydrogen-peroxide

Nitrogen, ammonia, ammonium salts, nitrous oxide, nitric oxide, nitrogen peroxide, nitrates.

Carbon, carbon dioxide, carbonates, carbon monoxide.

Chlorine, bromine, iodine, chlorides, bromides, iodides, chlorates, hypochlorites.

Sulphur, sulphuretted hydrogen, sulphides, sulphur dioxide, sulphur trioxide, sulphites, sulphates.

Phosphorus, phosphoretted hydrogen, phosphorus trioxide, phosphorus pentoxide, orthophosphates, phosphorus trichloride, phosphorus pentachloride.

Silica.

The principles of chemical change; oxidation and reduction; combustion; flame. Allotropy. Methods of purifying bodies. Methods of determining the composition of air and of water. Laws of chemical combination. Diffusion of gases. The atomic and molecular hypotheses. The simpler methods of determining equivalents. General considerations used in determining molecular weights and atomic weights. Chemical notation.

Alcohol, ethane, and the simpler ethylic compounds, considered in detail as typical bodies. Methyl alcohol and methane, and benzyl alcohol and toluene, considered briefly as analogues of alcohol and ethane. Characters of primary normal alcohols in general, and of their corresponding hydrocarbons.

Acetic acid, aldehyd and the simpler acetic compounds, considered in detail as typical bodies. Benzoic acid and benz-aldehyd, and formic acid and form-aldehyd, considered briefly as analogues of acetic acid and aldehyd. Characters of normal mon-acids in general and of their corresponding aldehyds.

Oxalic acid and the simpler oxalic compounds. Characters of normal di-acids in general.

Processes (i) for the detection of carbon, hydrogen, nitrogen, sulphur in organic compounds; (ii) for the estimation of carbon, hydrogen, nitrogen in organic compounds; (iii) for the production and analysis of the silver-salts of organic acids and the platinum-salts of organic bases; (iv) for the determination of vapour densities by the V. Meyer method.

The determination of the formula of an organic compound.

PRACTICAL WORK.

The practical work should include:—

Simple experiments and preparations illustrating the properties of the inorganic substances named above.

Simple quantitative experiments, such as, the determination of the loss of weight on heating a body, the determination of the volume of gas evolved on the solution of zinc in acid. The volumetric estimation of acids and alkalies.

The qualitative analysis of simple salts containing not more than one of the following metals, and one of the following acid radicals:—Sodium, potassium, ammonium, calcium, magnesium, zinc, copper, iron, lead, tin, oxide, carbonate, chloride, sulphate, nitrate, sulphide.

II.—MECHANICS AND PHYSICS.

Mechanics.

The principles of the lever, the inclined plane, the composition of forces, and virtual work, their experimental investigation and application to machines and other simple cases of equilibrium, centre of gravity, couple, torque, velocity ratio, mechanical advantage, efficiency. Application to liquids and gases. Density. Boyle's law. Pump, siphon, barometer, manometer. Body moving in a straight line so that its velocity changes proportionally with the time. Body moving uniformly in a circle. Motion of pendulum-bob. Momentum, force, impulse of a force, energy, conservation of energy.

Heat.

Simple thermometry. Simple methods of determining latent heats; specific heats; expansion of gases, liquids and solids; vapour pressures. Change of state. Simple experiments on conduction, convection and radiation. Mechanical equivalent of heat.

Sound.

Direct determination of the velocity of sound in air and in water; the effect of change of temperature on the velocity of sound in air; mode of propagation of sound in air. Simple methods of determining the pitch of a note. Characteristics of musical sounds.

Light.

Laws of reflection and refraction. Simple methods of determining refractive indices, and the focal lengths of mirrors and lenses. The simplest form of the compound microscope and of the astronomical telescope. Dispersion, the spectroscope, spectra of different kinds. Simple photometry. Elementary notions of the determination of the velocity of light.

Electricity and Magnetism.

Properties of electrified bodies. Methods of electrification. Electric induction. The gold leaf electroscope. Elementary quantitative notions of electrical quantity, capacity, potential, and specific inductive capacity. Condensers. Properties of magnets. Methods of magnetization. Magnetic induction. Simple methods of determining the declination and dip at a place and of comparing magnetic fields and moments. The construction of the batteries of Volta, Daniell, and Leclanché, and their theory. The secondary battery. The physical and chemical action due to a current. Simple galvanometers, ammeters, and voltmeters. Measurement of

current-strength, electromotive force and resistance. The production of currents by electro-magnetic induction. The broad principles of the induction-coil and dynamo.

PRACTICAL WORK.

Simple experiments illustrating the principles stated above.

APPENDIX II.

LIST OF APPOINTMENTS IN THE UPPER CONTROLLING STAFF OF THE INDIAN FOREST SERVICE.

NOTE.—This list shows only the existing number of sanctioned appointments, which is liable to alteration at any time. Forty-three of the appointments shown below in the various grades of Deputy and Assistant Conservators are being gradually transferred to the provincial Forest Services, which are recruited in India. The rest of the appointments named are held by members of the Imperial Forest Service, which is recruited under these regulations.

Number according to existing sanctioned scale.	Appointment.	Salary.
		Ra.
1	Inspector-General of Forests -	2,650 a month.
2	Chief Conservators (Burma and Central Provinces)	2,150 "
19	Conservators, in three grades -	1,900 " 1,700 " 1,500 " } respectively
* 136	Deputy Conservators -	Ra. 850 a month, i.e., £304 per annum, rising by annual increments of Rs. 40 a month to Rs. 700 a month; thereafter by annual increments of Rs. 50 a month to Rs. 1,250 a month, in the twentieth year of service. N.B.—The rupee is calculated as equiva- lent to 1s. 4d.
72	Assistant Conservators -	
9	Foreign Service appointments (four temporary)	
† 5	Officers employed at the Forest Research Institute and Col- lege, Dehra Dun.	

* These 227 appointments are assigned to the various provinces as follows:—Burma 71, Madras 39, Bombay 31, Central Provinces 25, Bengal 18, United Provinces 19, Punjab 14, and Eastern Bengal and Assam 10.

† These draw an allowance of Rs. 150 a month in addition to their salary.

NOTE.—Under the improved scale of salary shown above, no Exchange Compensation Allowance is granted.

APPENDIX III.

(See paragraph 19 of the Regulations.)

Leave.

1. The following is a summary of the principal regulations relating to the leave admissible to officers appointed to the Indian Forest Service by the Secretary of State from the United Kingdom.

Long Leave.

2. Furlough is admissible to an aggregate amount of six years during the service. The amount "earned" is one-fourth of an officer's active service, and the amount "due" is that amount less any enjoyed.

3. Furlough without medical certificate can, if due, be generally taken after eight years' active service, and again after three years' continuous service. It is limited to two years at a time.

4 Furlough on medical certificate may be granted (a) to an officer who has rendered three years' continuous service for not more than two years, but capable of extension up to three years; and (b) to an officer who has not rendered three years' continuous service, up to one year in any case, and up to such longer period, if any (but not exceeding two years in all), as the officer may have furlough "due" to him.

5. The allowances admissible during furlough are:—

- (1) During the first two years of furlough without medical certificate and during so much of furlough with medical certificate as may be "due"—half average salary, subject to certain maximum and minimum limits.
- (2) After the expiration of the period for which the foregoing allowances are admissible—one quarter of average salary, subject to certain maximum and minimum limits.

Short Leave.

6. Privilege Leave is a holiday which may be granted to the extent of one-eleventh part of the time that an officer has been on duty without interruption; and it may be accumulated up to three months, earned by 33 month's service. During privilege leave, the officer retains a lien on his appointment, and receives the salary which he would have received if on duty. An interval of not less than six months must elapse between two periods of absence on privilege leave.

Privilege leave may be prefixed to furlough, special leave, or extraordinary leave without allowances. The whole period of leave thus taken in combination is known as combined leave. Combined leave may not be granted for a period of less duration than six months, nor, except on medical certificate, may it be extended beyond two years.

7. Special Leave may be granted at any time for not more than six months, with intervals of six years' service; allowances, calculated as during furlough, are given during the first six months only, whether taken in one or more instalments. This leave is included in the aggregate of six years' furlough admissible.

8. Extraordinary Leave without allowances may be granted in case of necessity, and, except in certain specified cases, only when no other kind of leave is by rule admissible. It may be granted in continuation of other leave.

9. Subsidiary Leave in India for a minimum of 10 days, usually with half average salary, is granted to an officer proceeding on or returning from leave out of India, or on retirement, to enable him to reach the port of embarkation or to rejoin his appointment. It is admissible only at the end and not at the beginning of combined leave.

10. Short Leave is also granted to enable officers to appear at examinations, &c.

General Rules.

11. Leave of absence, whether on furlough or on privilege leave, can never be claimed as of right, and is given or refused at the discretion of Government.

12. After five years' continuous absence from duty, an officer is considered to be out of the employment of Government.

13. When leave allowances other than privilege leave pay are paid at the Home Treasury, or in a Colony where the standard of currency is gold, rupees are converted into sterling at the rate of exchange fixed for the time being for the adjustment of financial transactions between the Imperial and Indian Treasuries, unless any other rate has been exceptionally authorised. But for the present the rate of conversion is subject to a minimum of 1s. 6d. to the rupee. Privilege Leave pay when issued from the Home Treasury (this is only admissible when privilege leave is combined with other leave) is converted at 1s. 4d. to the rupee.

APPENDIX IV.

(See paragraph 19 of the Regulations.)

PENSIONS AND PROVIDENT FUND.

1. The following is a summary of the principal pension rules applicable to officers of the Indian Forest Service appointed by the Secretary of State from the United Kingdom.

An officer of the Indian Forest Service is eligible for a pension on voluntary retirement after completing 20 years' qualifying service or attaining the age of 55 years. If at an earlier date he is compelled to retire from the service through ill-health, not occasioned by irregular or intemperate habits, he becomes eligible for an invalid pension or a gratuity according to the length of his service.

The amount of pension or gratuity is regulated as follows:—

After a service of less than 10 years, an invalid gratuity not exceeding one month's emoluments for each completed year of service.

After a service of not less than 10 years an invalid pension not exceeding the following amounts:—

Years of Completed Service.	Maximum Limit of Pension.
10	Rs. 1,000 a year or Rs. 83½ a month.
11	1,400 " " 116½ "
12	1,800 " " 150 "
13	2,200 " " 183½ "
14	2,600 " " 216½ "
15	} 3,000 " " 250 "
16	
17	
18	
19	

After a service of not less than 20 years, a retiring pension not exceeding the following amounts:—

Years of Completed Service.	Scale of Pension.	Maximum Limit of Pension.
	Sixtieths of Average Emoluments	
20 to 24	} 30	{ Rs. 4,000 a year or Rs. 333⅓ a month.
25 and above		{ 5,000 " " 416⅔ "

Officers who have shown special energy and efficiency during an effective service of three years as Inspector-General of Forests or Conservator (first grade) may, at the discretion of the Government of India, be allowed an additional pension of Rs. 1,000 a year.

Subject to certain prescribed conditions, rupee pensions are now issued to pensioners residing in countries where the Indian rupee is not legal tender at the rate of exchange of 1s. 9d. the rupee.

2. A Provident Fund has also been established on the following basis:—

- (a) The contribution is compulsory up to 5 per cent. on salaries, with voluntary contributions of a further 5 per cent.; while on leave, an officer may subscribe any sum he pleases, subject to a minimum of 5 per cent. on his leave allowances and a maximum of 10 per cent. on his salary.
- (b) Compound interest on such payments is annually credited by Government to each officer subscribing, the rate being at present 4 per cent. per annum.
- (c) Receipts and payments are made in rupees only.
- (d) The sum which will thus accumulate to the credit of an officer to be his absolute property, to be handed over to him unconditionally on quitting the service; or, in the event of his death before retirement, to his legal representatives.

India and Colonial Police Service.

Examinations for these appointments will probably be held annually, and will be duly advertised. They are intended to provide for the Police Services of India, Burma, Hong Kong, the Straits Settlements, and the Federated Malay States. There is no expensive preliminary training as for the Forest Service, and candidates take up their appointments at once. Very soon after the examination candidates start for India, and get a free passage. In India probationers receive 300 rupees a month (*i.e.*, £240 per annum, taking the rupee as equivalent to 1s. 4d.), and as soon as they have passed the departmental examination they are on the regular staff, and their pay will rise through the different stages up to the Inspector-General's stipend of 3,000 rupees a month, or £1,800

per annum. For this Service good riding is a *sine qua non*. Colonial Police probationers (for whom also skill in riding is imperative) begin with pay at £225 per annum, and are subject to local regulations as to examinations in languages, etc. On passing these they get £300 per annum. The higher posts range from £360 to £1,000 per annum. All these officers get free quarters, but the value of these quarters will not count for pension purposes.

The regulations for the Indian Police Service are given as follows in detail:—

1 *Place of Examination*.—The examination will be conducted by the Civil Service Commissioners. Candidates may undergo the written part of their examination in London, Edinburgh, or Dublin, or at any of the provincial centres at which the simultaneous examination of candidates for admission to the Royal Military College, Sandhurst, is to be held. A list of the probable centres may be obtained from the Civil Service Commissioners. The oral and practical parts of the examination will be held in London only.

Examination Fee.—A fee of £2 is required from candidates examined in London, but when the written examination is conducted elsewhere than in London the fee is £3. Candidates examined at a college or school will probably be required to pay a local fee (in order to defray the expenses of superintendence), as to which they should obtain early information from the college or school authorities. The fee payable to the Civil Service Commissioners must be paid by means of stamps of the specified amount. Instructions on this point will be issued to candidates about ten days before the examination.

2. *Number of Appointments*.—The number of candidates to be selected will vary from year to year. In 1906 it will probably be 32, viz., Madras 4, Bombay 3, Bengal 6, United Provinces 4, Punjab 6, Burma 3, Eastern Bengal and Assam 3, and Central Provinces and Berar 3.

3. *Conditions of Eligibility*.—Every candidate must be a British subject of European descent, and at the time of his birth his father must have been a British subject, either natural-born or naturalised.

in the United Kingdom. The decision of the Secretary of State in Council as to whether a candidate satisfies this condition shall be final. Candidates must, without exception on any ground, be above 18 and under 21 years of age on a specified date; for the 1908 competition it is 1st June. They must be unmarried, and if they marry before reaching India they will forfeit their appointments.

4. *Form of Application.*—Application to compete at the examination must be made on a printed form to be obtained from the Secretary, Judicial and Public Department, India Office, Whitehall, London, S.W., and to be returned to him, with the necessary documents, not later than a specified date; for the 1908 competition it is the 1st May.

No applications received after that date can be considered.

Candidates must be prepared to attend at the India Office, if required at their own expense, to reply to any enquiries which may be considered necessary in connection with their application.

5. *Subjects of Examination.*—The subjects and the marks assigned to each are given below:—

	Marks.	
English - - -	2,000	} Not more than five subjects may be taken up, of which English must be one.
Mathematics (I.) - -	2,000	
Mathematics (II.) -	2,000	
Latin - - -	2,000	
Greek - - -	2,000	
French - - -	2,000	
German - - -	2,000	
History - - -	2,000	
Science - - -	2,000	

In addition to the above-mentioned subjects, candidates may take up Freehand Drawing, to which 250 marks will be allotted. Candidates must obtain such an aggregate of marks in the examination as a whole as may indicate, in the judgment of the Civil Service Commissioners, a competent amount of general proficiency.

6. *Medical Examination.*—Those candidates who are successful in the literary examination will be required, shortly after the result of that examination is declared, to undergo a strict examination by a Medical Board, at the India Office, as to their physique and capacity for active out-door work in the plains of India. Instructions as to the date and time of this examination will be issued to successful candidates by the India Office.

To avoid possible disappointment candidates may undergo a preliminary medical examination within two years before they compete. Application should be addressed to the Under Secretary of State, India Office, Whitehall.

7. *Appointment of Probationers.*—The Secretary of State will nominate as probationers such competitors as attain the highest aggregate of marks (provided that they obtain the minimum aggregate referred to above, and that they pass the medical examination and satisfy the requisite conditions in other respects).

8. *Riding Test.*—Selected candidates will be examined by the Civil Service Commissioners as to their ability to ride, and will be required to produce—

- (a) a certificate from the Civil Service Commissioners that they are able to ride well and to perform journeys on horseback; or
- (b) a certificate from the Civil Service Commissioners of minimum proficiency* in riding.

In the latter case they will be subjected, on their arrival in India, to such further tests in riding as may be prescribed by their Government, and will not be appointed Assistant Superintendents of Police until they shall have passed such tests to the satisfaction of their Government.

9. *Allotment to Provinces.*—Selected candidates who have successfully passed the above-mentioned tests will be allotted, as probationers, to the various provinces upon a consideration of all the circumstances, including their own wishes; but the requirements of the public service will rank before every other consideration. The allotment will also be subject to the right of the Government of India to make transfers, if necessary.

* Candidates are warned that the certificate of minimum proficiency in riding, without which they will not be allowed to proceed to India, is only granted to those who can qualify in a series of tests which includes jumping. It is, therefore, most important that riding lessons should not be postponed until after the result of the literary examination is declared.

The chief tests will be Saddling and Bridling; Mounting and dismounting Trotting and Cantering; Riding without stirrups at a trot, Riding without stirrups or reins at a trot; Jumping the bar at a moderate height; Jumping a moderate hedge hurdle. Special importance will be attached to the first test (Saddling and Bridling).

Although the examination will, in the main, be confined to those points, the examiner will not be debarred from applying any other tests which may appear desirable.

10. *Outfit*—It is an ordinary condition of appointment to the Police Department that a successful candidate shall be supplied by his parents or guardians (a) either with a uniform or with the cost of it, and (b) with not less than £50 for the purchase of a horse and saddlery in India.

11. *Departure for India*.—The probationers will be required to start for India not later than October, so as to arrive in the course of November. Failure to embark in time will, in the absence of satisfactory explanation, lead to forfeiture of appointment. Free passages to India will be provided by the India Office, but any probationer resigning his appointment within three years on any ground but that of health, supported by a medical certificate, will be required to refund the cost of his passage.

12. *Salary during Probation*.—On arrival in India probationers will receive an initial salary of Rs. 300 a month.

13. *Period of Probation*.—Probationers will be required to qualify by passing the necessary departmental examinations (as well as the riding test, if necessary, see Rule VIII) within two years of their arrival in India.

14. *Liability of Probationers to Removal*.—Any probationer who may fail to pass the prescribed examinations within two years, or be found unfit for Police duties, will be liable to removal from the Service. Any probationer so removed from the Service will be furnished with a free passage to England, provided he utilises such passage within three months from the date of such removal.

15. *Promotion after Probation*.—No probationer will be eligible for promotion, either acting or substantive, until he has passed the prescribed departmental examinations, including the riding test.

LIST OF APPOINTMENTS IN INDIA ORDINARILY RESERVED FOR THE POLICE DEPARTMENTS OF THE SEVERAL PROVINCES.

The salaries and number of appointments of each grade vary slightly in the different Provinces, but a clear idea of the scales will be gathered from the following summary:—

Assistant Superintendents of Police.—Salaries, 800, 400, and 500 Rs. per month. The numbers employed range from 25 in the Central Provinces to 48 in Agra and Oudh.

District Superintendents of Police.—Salaries, 700, 800, 900, 1,000, and 1,200 Rs. per month. Numbers range from 28 to 54 in different Provinces.

Deputy Inspectors-General.—Salaries, 1,500 and 1,800 Rs. per month. Numbers range from 2 in some Provinces to 5 in others.

Inspectors-General —One for each Province. Salaries, 2,250 per month in the Central Provinces, and 2,500, rising by 100, to 3,000 Rs. in the other Provinces.

EXTRACT FROM THE REGULATIONS AS TO THE PHYSICAL EXAMINATION OF CANDIDATES FOR APPOINTMENTS UNDER THE GOVERNMENT OF INDIA.

These Regulations are published for the convenience of candidates and in order to enable them to ascertain the probability of their coming up to the required physical standard. But it must be clearly understood that the Secretary of State reserves to himself an absolute discretion to reject as unfit any candidate whom he may consider, after hearing the opinion of his medical advisers, to be physically disqualified for the public service; and that his discretion is in no respect limited by these Regulations.

GENERAL PHYSICAL REQUIREMENTS.

1 A candidate must be in good mental and bodily health, and free from any physical defect likely to interfere with the efficient performance of duty.

2 In the examination of candidates the Medical Board will apply the following table of correlation of age, height, and chest girth —

Age.	Height without Shoes.	Chest	
		Girth when Expanded.	Range of Expansion.
19 to 21	Inches.	Inches.	Inches.
	63 and under 65	35	2
	65 " 68	35	2
	68 " 70	35½	2
	70 " 72	36	2
	72 and upwards	36½	2½

3. *Measurement of Height.*—The candidate will be placed against the standard with his feet together, and the weight thrown on the heels, and not on the toes or outside of the feet. He will stand erect without rigidity, and with the heels, calves, buttocks, and shoulders touching the standard; the chin will be depressed to bring the vertex of the head level under the horizontal bar, and height will be noted in parts of an inch to eighths.

4. *Measurement of Chest.*—The candidate will be made to stand erect with his feet together, and raise his hands above his head. The tape will be carefully adjusted round the chest, with the posterior upper edge touching the inferior angles of the shoulder blades, and its anterior lower edge the upper part of the nipples. The arms will then be lowered to hang loosely by the side, and care will be taken that the shoulders are not thrown upwards or backwards so as to displace the tape. The candidate will then be directed to empty his chest of air as much as possible. This is best done by continuous whistling with the lips as long as sound can be produced. The tape is carefully gathered in during the process, and when the minimum measurement is reached it is recorded. The candidate will then be directed to inflate his chest to its utmost capacity. This maximum measurement will likewise be noted. The girth with the chest fully expanded and the range of expansion between the minimum and maximum will then be recorded.

5 The hearing must be good.

6. The speech without impediment.

7. The teeth in good order, i.e., decayed or broken teeth must be properly stopped or crowned, and deficient teeth replaced by artificial teeth, where necessary for effective mastication.

8. The chest must be well formed, the lungs and heart sound.

9 Rupture, hydrocele, varicose, varicose veins, in a severe degree, or other condition likely to cause inefficiency will disqualify a candidate, unless such condition is cured by operation.

10. The limbs, feet, and toes must be well formed and developed, with free and perfect motion of all joints.

11 A candidate must have no congenital malformation or defect likely to interfere with efficiency.

12. A candidate must not be the subject of chronic skin disease.

13. Evidence of previous acute or chronic disease pointing to an impaired constitution will disqualify.

REGULATIONS AS TO STANDARD OF VISION FOR THE INDIAN POLICE DEPARTMENT.

1. If a candidate can read $D = 6$ at 6 metres (20 English feet) and $D = 0.6$ at any distance selected by himself, with each eye without glasses, he will be considered fit.

2. If a candidate can only read $D = 24$ at 6 metres (20 English feet) with each eye without glasses, his visual deficiency being due to faulty refraction, which can be corrected by glasses which enable him to read $D = 6$ at 6 metres (20 English feet) with one eye, and $D = 12$ at the same distance with the other eye, and can also read $D = 0.6$ with each eye without glasses at any distance selected by himself, he will be considered fit.

3. If a candidate cannot read $D = 24$ at 6 metres (20 English feet) with each eye without glasses, notwithstanding he can read $D = 0.6$, he will be considered unfit.

4. Squint, inability to distinguish the principal colours, or any morbid condition, subject to the risk of aggravation or recurrence in either eye, will cause the rejection of a candidate.

LEAVE.

The conditions of leave are largely similar to those given above for the Indian Forest Service.

PENSIONS AND PROVIDENT FUND.

1. The following is a summary of the pension rules applicable to officers of the Indian Police appointed by the Secretary of State for the United Kingdom.

An officer of the Indian Police becomes eligible for a pension on completing 30 years' qualifying service, or on attaining the age of 55 years. If at an earlier date he is compelled to retire from the service through ill-health not occasioned by irregular or intemperate habits, he becomes eligible for an invalid pension or a gratuity according to the length of his service.

The amount of pension or gratuity is regulated as follows:—

After a service of less than 10 years—A gratuity not exceeding one month's emoluments for each completed year of service.

After a service of not less than 10 years—A pension not exceeding the following amounts:—

Years of Completed Service.	Average Emoluments.	Maximum Limit of Pension
10	10	Rs 2,000 a year
11	11	2,200 "
12	12	2,400 "
13	13	2,600 "
14	14	2,800 "
15	15	3,000 "
16	16	3,200 "
17	17	3,400 "
18	18	3,600 "
19	19	3,800 "
20	20	4,000 "
21	21	4,200 "
22	22	4,400 "
23	23	4,600 "
24	24	4,800 "
25 and above	30	5,000 "

Officers who have shown special energy and efficiency during an effective service of three years in certain appointments may, at the discretion of the Government of India, be allowed an additional pension of Rs. 1,000 a year.

Subject to certain prescribed conditions, rupee pensions are now issued at the rate of exchange of 1s 8d the rupee to pensioners residing in countries in which the Indian Government rupee is not legal tender.

2. A Provident Fund has also been established on the following basis:—

- (1) The contribution is compulsory up to 5 per cent. on salaries, with voluntary contributions of a further 5 per cent.
- (2) Compound interest on such payments is annually credited by Government to each officer subscribing, the rate being at present 4 per cent per annum.

- (3.) Receipts and payments are made in rupees only.
- (4.) The sum which thus accumulates to the credit of an officer is his absolute property, subject to the rules of the Fund, and is handed over to him, unconditionally, on quitting the service; or in the event of his death before retirement, to his legal representatives.

For the **INDIAN MEDICAL SERVICE** consult the chapter on Medicine, where full details are given.

Student Interpreters for the Ottoman Dominions, Persia, Greece, Morocco, etc.

These appointments are made to supply the Missions and Consulates in the East with officers versed in the languages and able to discharge the duties of Interpreters and Consular Officers. Candidates must be between 18 and 24 years of age. These posts offer a field of usefulness for those whose forte is in languages, and are willing to reside abroad. Successful candidates are paid £200 a year and have to reside for nine months a year for two consecutive years at a University selected by the Secretary of State, and have to execute a bond for £500 to indemnify the Government against leaving the service or being discharged for misconduct or neglect, within five years. On leaving the University the students are named Assistants, and are detached for service under the Embassy at Constantinople, the Legations at Teheran, Athens, or Morocco, or in one of the Consulates in the East. The salary is then £300 a year. Before advancing further in the service, they have to pass an examination in Turkish and International Law and History, and Treaties. The higher ranks in the service are Vice-Consuls, with salaries ranging up to £500, and Consuls ranging

from £500 to £1,250: in both cases with allowances. A special feature of the examination is the prominence given to ancient and modern languages. Among the obligatory subjects are Latin and French—the examination in both being very searching—and included in French, are dictation, letter-writing and conversation. The only optional subjects are ancient Greek, Italian, German and Spanish. The examinations are held periodically, every year or two years, and are advertised beforehand.

Egyptian and Sudanese Civil Services.

Applicants for appointments in the above services should be about 22 or 23 years of age and have completed, or be about to complete, their University course.

Persons not fulfilling these requirements can only be accepted if they possess special qualifications or if they are required to fill special posts.

Application for appointment should be made

- (1) By members of the University of Oxford through the Appointments Committee of that University;
- (2) By members of the University of Cambridge through the Cambridge Appointments Board.
- (3) By members of the University of Trinity College, Dublin, through the Trinity College, Dublin, Appointments Committee.
- (4) By Members of the University of London through the University College Appointments Committee.

- (5) Candidates belonging to none of the above should apply direct to the Secretary to the Selection Board, Ministry of Finance, Cairo.

The Egyptian Government is not concerned with the religious or political views of the candidates.

Candidates will be allowed in future to state their preference for Service either in Egypt or in the Sudan.

During the probationary year candidates will further be required to attend courses of instruction in First Aid, elementary surveying, account keeping and such other subjects as may from time to time be ordered by the Selection Board in accord with the University authorities. Proficiency in subjects other than Arabic is not obligatory.

It is desirable that candidates should be able to ride and those who are not accustomed to riding should take lessons.

A sound knowledge of French is most useful, if not indispensable in *Egypt*.

On completion of their year of probation the candidates will be required to pass an examination in Arabic. They will also be re-examined by the Medical Board in order to ascertain if their state of health is still satisfactory. The result of these two examinations will be laid before the Selection Board for the current year, who will approve or reject the probationary candidates.

Candidates not elected by the Board, but recommended by them, are eligible, if required, for posts in the Agricultural Bank of Egypt.

Egyptian Civil Service.

On arriving in Egypt, accepted candidates will enter on probation for one year at least, or two years at most, in any Department to which they may be appointed, with a minimum salary of L.E.240 per annum. The Egyptian £ (L.E.) is worth £1 0s. 3½d.

Promotion must depend on the efficiency of the official concerned; but under normal circumstances an Inspector of six or seven years' service would probably be drawing from L.E.400 to L.E.600 a year. There are also certain higher posts (Police, Customs, etc.) with salaries of from L.E.800 to L.E.1,500, which have hitherto generally been filled by promotion. Liberal travelling allowances are allowed to Inspectors, whose nominal pay is thereby considerably increased.

All salaries are subject to a 5% reduction for pension. To earn a pension a man must have been under 35 at date of appointment; he must have served 25 years and be 55 years of age, unless he has been retired from the Service after not less than 15 years for ill-health or the suppression of his post. The pension is calculated on the average of the last three years' salary at the rate of 1/60th of such average for each year of service, provided that no pension can exceed L.E.600 a year.

Sudanese Civil Service.

A newly appointed official is required to serve for the first two years on probation.

The salary of a Deputy-Inspector in the Administrative branch on first appointment is L.E.420 per annum. A scale for increase of pay and rules for regulating promotion have been laid down.

Thus the Inspectorate Staff is divided into three classes.

Deputy Inspectors at L.E.420, L.E.480, and L.E.540; Junior Inspectors at L.E.600, L.E.660, and L.E.720; and Senior Inspectors at L.E.700, L.E.840, and L.E.900. An official is eligible for increase from one rate of pay to another in the same class every two years, and a Deputy Inspector after having served four years as such can be promoted to Junior Inspector.

Length of service alone, however, constitutes no claim to increase of pay or promotion, which depends entirely upon an official's abilities and the zeal with which he performs his duties. In addition to the salary there are certain allowances, such as travelling allowance, climate allowance in some of the less healthy provinces, and forage and grooms' allowances for those who keep animals.

In course of time it is hoped that Civilian Inspectors will become qualified for these posts. The salaries of Governors, as at present fixed, are from L.E.900 to L.E.1,200 per annum.

An ordinance for regulating the pensions and retirements of officials has been published. A deduction of 5% is made from the pay of all pensionable officials as a contribution towards pension.

An official who is over 35 years of age at the time of his appointment cannot become pensionable except in the case of appointments to certain posts, such as judges, for which special acquirements are necessary.

Voluntary retirement with pension is permitted after forty-five years of age, provided an official has twenty years' service.

The pension is calculated on the average of the salaries drawn during the last three years of service, at the rate of $\frac{1}{48}$ th of the salary for each year of service. The maximum pension obtainable is L.E.800.

Select list of Colleges, other than those of the Universities of Oxford and Cambridge, Public Schools, Tutors, &c. (for further information consult Appendices I, IV, and V):—

Edinburgh University.
University College, London.
King's College, London.
University of Durham.
University of Liverpool.
University College,
Aberystwyth.
University College, Reading.

—
The Supplemental Coaching
College, London, S.W.

Durham School.
Sedbergh School.
Eastbourne College.
Bromsgrove School.
Giggleswick School.
Trent College.
King's School, Canterbury.
King's School, Rochester.
St. Lawrence College,
Ramsgate.
Christ College, Brecon.
Plymouth College.
Monmouth School.
Dover College.
Brighton College.
Dean Close School,
Cheltenham.
Glantham School.
Kendal Grammar School.
Leighton Park School.
Windermere Grammar
School
Carlisle School

VII.—ENGINEERING.

The engineering profession offers great and increasing opportunities, but, to ensure success, it demands special qualifications. There is at the present time a rush towards the profession; parents, whose sons can take a mechanical toy to pieces, forthwith conclude that they are predestined to become engineers, and boys, who dislike book-learning and the steady routine of school, clamour for the more attractive interests of the workshop. Parents cannot be too clearly warned that their sons must, first of all, have a good, sound, general education, before they can hope to succeed in the profession. Before leaving School a lad should have a thorough knowledge of Arithmetic, Algebra, Geometry, and Plane Trigonometry, should be well acquainted with the main principles of Physics and Chemistry, and should have gone through a course of Freehand, Model, and Geometrical Drawing. A knowledge of Latin, and of one modern language, at least, either French or German, is most desirable, and, if a lad has laid a good foundation in both languages, all the better. If boys leave school without this preliminary training, the majority of them will always be seriously handicapped; a genius, of course, will transcend all limitations; the ordinary lad, who leaves school

without a decent general education, may become a good craftsman or superior artisan, but he will never rise to the higher positions in the profession as draughtsman, manager, superintendent, inspector, or consulting expert. The Right Hon. Henry Hobhouse, a member of the Consultative Committee of the Board of Education, speaking a few years ago at the annual dinner of the Institution of Mechanical Engineers, said that we must not forget that it was only on the firm bedrock of general education that we could erect any system of scientific instruction that was worthy of the name. Stress has been laid on the importance of a knowledge of one or more modern languages, because valuable opportunities of work abroad present themselves to the young engineer, who can speak French, or German, or both.

Needful Qualifications.—Assuming, then, that a lad on leaving school, not earlier than 16, and better at 17 or 18, has this sound preliminary training, we may next enquire what further qualifications are desirable. He should possess a robust physique, for he must face early hours and hard work; he should have a love of machinery and a taste for mechanical pursuits, and be skilful with his hands. A lad should also show promise of ordinary tact and common-sense, for he must learn how to manage men, if he is to be a success when put in charge of any important undertaking; however excellent his scientific skill may be, if, when placed in a position of responsibility, he cannot handle his subordinates properly, he is useless from the commercial point of view. However, this important quality of tact may be largely acquired under the practical conditions of work in the “shop.”

What does the term Engineer Cover?—

*There are five main branches of the profession, viz:—

1. **Civil,*** i.e., constructive engineering with its many sub-divisions, railways, harbours, docks, waterworks, sewage works, surveying, &c.
2. **Mining engineering**, involving knowledge of geology, sinking of shafts, extraction of metals from their ores, &c.
3. **Mechanical**, including the construction of all kinds of machinery.
4. **Naval**, or Shipbuilding.
5. **Electrical**, with its five sub-divisions of (1) Electric lighting. (2) Electric traction. (3) Power transmission. (4) Telegraphy and telephony. (5) Electro-chemical work.

These various branches overlap one another to some extent; for instance, the civil engineer will need the help of the mechanical engineer to construct his bridges, for his locomotives, cranes, pumping machinery, &c. So too will the mining and naval and electrical engineers all need to be conversant with mechanical engineering. We may therefore say that mechanical engineering is important for all branches,

*The term "Civil" is used in this classification in its popular and limited acceptance. This is not its scientific and proper meaning. Civil Engineering comprises all branches of engineering, it deals with every department of the profession that has to do with the life of citizens as distinct from soldiers. The Civil Engineer is a Civilian Engineer, that is to say, a practitioner of any branch of engineering except military engineering. It is in this wider meaning that the term is understood in the constitution of the leading Engineering Society, the Institution of Civil Engineers, which has a roll of 8,000 members representing all the different branches of the profession.

and that it is emphatically important for the Electrical branch, for the chief qualification of an electrical engineer is that he should first be a mechanical engineer. Sir Alexander Kennedy, then President of the Institution of Civil Engineers, in the course of a recent address, said that there was a great temptation to young men starting on an engineering career to make up their minds that there was one particular department of engineering in which they were definitely interested, and they did not care about any other part. If there was one thing that was fatal to the probability of success of an engineer in practical work it was the idea that he should specialise when he was very young. This was an American idea, and the justification for it was that every engineering department was so big that a man had better devote the whole of his life to the study of one particular branch of it, and then he might get to know that thoroughly. There might be something in the argument, but nearly all the men who were best known in the engineering profession were not working at the particular branch at which they started.

The student who devoted himself to one branch would in a few years become antiquated, because something new was always coming to the front. There would be a time when wireless telegraphy would be as common as the domestic telephone, and he advised students not to narrow their ideas to one particular branch. The British Engineer owed his success to the fact that he did everything that came to his hand, whether it was his particular branch or not, and there could be no doubt that the best way was to become a thoroughly good all-round man.

How best to enter the Profession.—This is a moot point on which authorities differ. All are agreed that practical work in the shops is, at an early or later stage, absolutely imperative, and all, too, are agreed that, if a youth is to be something more than a skilful mechanic, he must pass through a course of adequate scientific training. Difference of opinion arises when we face the question as to which is the best method of securing these two requisites—practical skill and scientific theory. The old system has been for a youth to enter “works” about 16 or 17 as a premium-paying pupil, pass through all the departments until he reaches the drawing office, and pick up his scientific knowledge as he goes along by attending evening classes, &c. This is the system which some experienced engineers still advocate. The trend of feeling, however, among a majority of the ablest men at the present time is in another direction. They demand a clearer recognition of the claims of systematic training in scientific theory. They realise that our commercial supremacy is being seriously challenged in the markets of the world by Germany, America, and Switzerland, and they believe that one of the reasons of this is that these countries give a better scientific training to those who are to become engineers. For example, Professor Dalby, who spent some time in America in 1903 in enquiring into the whole question, found that, while in the United Kingdom only 3,370 students attended higher courses in Technical Science, 10,740 did so in Germany, and 13,465 did so in the United States of America. And the result of this is that the American or German is often more resourceful, more equal to the occasion than the Britisher. The following

words were recently spoken by Mr. John Tweedy, then President of the North East Coast Institution of Engineers and Shipbuilders: "It is not reassuring to find that in most chemical industries we are largely outstripped by our neighbours across the water. Even our armour plates are made under foreign patents. The fastest ship crossing the Atlantic is not an English ship. It is a German flag that flies at the masthead. You will find our electrical stations, go where you will in England, perhaps filled with English engines but not with English electrical machinery. To-day, for our smelting works, numbers of orders have been given for gas engines to be driven by blast-furnace gas, and the engines are not designed by England. I think these are lessons that we all ought to take to heart."

These words were spoken about four years ago. Happily, since then, our country has made great strides forward: since then, the "Lusitania" and the leviathan "Mauritania" have won back for us the laurels of the Atlantic: since then, a clearer appreciation of the value of scientific methods has become more widely extended among many of the best and most progressive firms in the country; here and there able men still advocate the old "rule-of-thumb" system, but its day, we trust, is done, for the general question of higher education in science depends very largely upon the attitude assumed by employers.

In November, 1903, a very important Committee was appointed to consider and report to the Council of the Institution of Civil Engineers upon the best methods of training and education of all classes of Engineers. That Report was issued in 1906, and a

copy should be procured from Messrs. W. Clowes and Sons, 23 Cockspur Street, S.W.: price 6d, by post 7d. Sir William White was the Chairman of the Committee, and among the other members were Sir John Wolfe Barry and Sir Alexander B. W. Kennedy. The Committee insist—and to this we would draw the attention of parents—upon the absolute necessity of a sound general education. Such an education is supplied in any of the schools specified at the close of this chapter

The Report outlines a course of preparatory training in which it is suggested that a boy intended for the engineering profession should, before leaving school and commencing to specialise, have attained a standard of education equivalent to that required by the Institution studentship examination. He should not commence his special training until he is about 17 years of age. A leaving examination for secondary schools, similar in character to those already existing in Scotland and in Wales, was desirable throughout the United Kingdom, and the standard should be such as could be accepted by the Institution as equivalent to the studentship examination, and by the Universities and Colleges as equivalent to a matriculation examination. Greek should not be required, but an elementary knowledge of Latin was desirable. Modern languages, especially French and German, should be studied, and should be taught colloquially, or in such a way as to give the pupils a practical knowledge of each language, sufficient to enable them to study its literature and to converse in it with some degree of facility. Instruction in mathematics should be given by methods differing considerably from those usually adopted in the teaching of this subject merely as an intellectual exercise. The geometrical side of mathematics should be fostered, and instruction in practical arithmetic should be carried further than has been generally the case hitherto, with the object especially of encouraging the use of contracted methods and operations in mental arithmetic. Several other suggestions are made, and it is recommended that the whole scheme should be officially communicated to the Board of Education and widely circulated amongst those engaged in the conduct of secondary schools and engineering colleges, in order to assist in the removal of one great difficulty now universally felt

in institutions where applied science is taught. "At present," the Committee say, "a considerable proportion of students enter technical institutions ill-prepared, and at least one year has to be devoted to instruction which ought to have been procured beforehand."

PRELIMINARY TRAINING IN THE WORKSHOP.

With regard to the subsequent work of engineering training, the Committee recommend that the average boy intending to take up the profession should leave school when he is about 17 years of age. The minimum should be 16, and the maximum 18 years. Practical training should be divided into two parts, and the preliminary stage should consist in all cases of at least a year spent in mechanical engineering workshops. "It is recognised," say the Committee, "that at present there are practical difficulties in arranging for this workshop year being interposed between the school and college work, and that employers may consider the arrangement objectionable in their interests." On the other hand, the Committee suggest that these difficulties should not be insurmountable; and the general agreement as to its advantageous effect on training leads them to hope that practical trial may be given to the suggestion. During workshop hours boys should keep the regular working hours, should be treated like ordinary apprentices, be subject to discipline, and be paid wages. Nothing should be done in the form of evening study which would impose undue strain upon the physique of boys, because in some cases this might prevent attendance at evening classes, but experience showed that many boys could attend such classes without physical injury, and with great educational advantage. "The Committee think," the report proceeds, "that all boys should, at least, maintain their scholastic acquirements during the introductory workshop course, and, for the class of boys in question, it is considered that this result might be secured, by private tuition or otherwise, without undue physical strain."

THREE YEARS AT COLLEGE.

As a rule it was preferable to proceed from the workshop to a Technical College or a University and for the average student the period of college study should be three sessions. In the case of students who desire to follow up the science of their profession, a fourth year might be added. A sound and extensive knowledge of mathematics was necessary in all branches of engineering, and it should be possible for the average student to master sufficiently

during the common course of instruction for all engineering students the subjects included under the category of pure mathematics. Then, at least three to four years should be spent in practical training, inclusive of the "introductory workshop course." The Committee favour a total period of four years' practical training where it can be secured, and it was highly desirable that a part of this practical training should be obtained in drawing offices, for the Committee recommend strongly efficient instruction in engineering drawing.

How then, under present conditions, can a parent best proceed? The choice lies before him of one or other of the following courses:—

1. The Pupil-Apprentice System.—The Pupil-apprentice or pupil (as opposed to the working apprentice whose aim is to be a craftsman) will enter "works" about the age of 16 or 17 on payment of a premium. The premium will range from £50 to £100 per annum, which is generally returned, in part, in the form of a small weekly wage, and the period of pupilage will extend from three to five years. It is very important that a firm of high standing be selected, where a youth may have an opportunity of passing through all the departments before he enters the drawing office.

The drawbacks of this system are threefold. The premium is a heavy strain upon the resources of the average parent. A lad in many firms is largely left to his own devices; an earnest lad will no doubt profit by the guidance of the foremen and by the experience he gains, but a lazy youth may easily waste his opportunities. Then, finally, there is the difficulty of scientific training; after a long day in the "works" few boys are physically fit for intellectual effort in attending evening classes during the period of pupil-

age, and, if the study of scientific theory is postponed until pupilage is over, a lad finds that the knowledge he possessed when he left school has become rusty.

The above system will apply mainly to the lad who intends to become a mechanical engineer, using the term mechanical in its widest application.

If he intends to become a civil or a mining engineer he may be placed as a pupil in the office of a civil or a mining engineer of standing at a premium of £100 to £500 for an apprenticeship of three to five years. His difficulty, again, here will be to secure a good training in theory; this he can best do by attending evening classes.

If his aim is to be an Electrical Engineer, then, as we have stated before, it is absolutely essential that he should lay a firm foundation of practical knowledge of prime movers and mechanical construction, and he should pass, sooner or later, through a course of practical training in the works of a firm of engineers.

II. Higher Technical Training.—A youth following this system would remain at school until 17 or 18, and then proceed to a College or Technical Institute for a three years' course of training in scientific theory. At the close of his course in the Technical College he would enter "works" for a year or two as an "improver," either paying a small premium, or, if he possessed conspicuous scientific knowledge, possibly receiving a small wage. If he showed grit and practical skill, he would quickly find himself in a position to which a good salary is attached.

The drawback of this system is that, for several important years of a lad's life, the knowledge of scientific theory has to be sought at the expense of practical work in the actual "shops." Some of the best Technical Institutions try, to some extent, to remedy this drawback by having engine rooms and workshops in which theory may be applied to practice, and earnest men, while they are passing through the course of the Technical College, seek every opportunity of spending a few months in "works" during the vacations.

The system undoubtedly has its weak side, but if a young fellow is determined, after his course at College, to take his coat off, and gain thorough practical knowledge in "works," he may look forward with confidence to a successful career.

It may be well to bear in mind that this is the system that obtains in America; they are content there to take "long views," and their patience is rewarded by the production of resourceful and highly-trained men. A youth in America remains at school until he is 18, then proceeds to a University or Professional Institution, whence he graduates after a four years' course. He then spends two years as an apprentice with an engineering firm. The demand for these graduate apprentices is greater than the supply. Mr. Mullineux Walmsley writes: "Employers offer a living wage at the start of the service, and do not charge any premium. As a rule, it may be said that the competent College graduate very quickly rises above the bare living wage at which he is taken on. In most cases, the end of the first six months finds him advanced to a much more highly paid position,

and within two years from leaving College the best of the men occupy well-paid and responsible posts."

Professor Ripper, a member of the Moseley Commission, writes, on the same subject, as follows:—

"Whatever the prejudice may be in some quarters there is no mistaking the fact that, great as is the annual output from the colleges, the demand for college trained men is greater than the supply.

The Pennsylvania Railroad, which is the most advanced railroad company in America, has made it a *sine qua non* that the new appointments to all the executive positions shall be men with an engineering college training, and the majority of the officials on the general staff are men with college degrees. The example of this company is being followed by many other railroad companies who are in constant communication with the colleges for the supply of skilled assistants. In most of the colleges all their graduates at the end of the fourth year are secured by various companies before their college term is completed, and the usual remark on the part of the authorities was, 'We could place twice as many men if we had them.' Electrical firms especially keenly compete with each other for the best men, and representatives from the firms call at the colleges and select men by personal interview. The manufacturer comes to the college, the college does not go to the manufacturer.

All this is in very marked contrast to the condition of things a few years ago. Formerly letters of application for students specified that they must have had practical experience; now the employers write to say that the student must have had a sound scientific education, they will see that he receives a practical training.

In all cases young men engaged from the colleges are started at a living wage, so that they are at least able to maintain themselves at once.

In America at the present time the colleges are filled with students of a senior type, who are receiving an advanced and thoroughly sound training, and it is business concerns led by these men with which the British manufacturer will have to compete. The

question for our country to ask itself is: Are we preparing the British youth of to-day to compete successfully with his commercial rival? It must be confessed that, so far as the study of science as applied to industry is concerned, our position at present is inferior to that of America."

It is perhaps one of the most encouraging signs for the future of engineering in this country that employers are beginning to realise the importance of scientific training, and when they are ready to admit the highly-trained man of 21 or 22 into their "works" on advantageous conditions, they will probably find that he may be of more value to the firm than the premium-paying pupil who knows nothing of scientific theory.

A Higher Scientific training may be obtained:—

At Cambridge, where the Mechanical Sciences Tripos is drawn up to this end.

Residence—three years. Total cost from £500 to £600 according to a man's mode of living.

Every candidate for the Mechanical Sciences Tripos is required to pass a qualifying examination (not compulsory until the Tripos of 1909) in Mathematics and Mechanics before the end of his fourth term, unless he has already obtained honours in some other Tripos. This examination is held twice a year, at the end of the Michaelmas and Easter terms; and a student who fails to pass the examination may be a candidate on a second occasion, provided he is then otherwise qualified. The examination consists of two papers, and a candidate must pass in both. He can then proceed to the Tripos, which may be passed at the end of his second or third year of residence, but he cannot proceed to his

B.A. degree until he has completed three years of residence. The Tripos Examination consists of eleven papers, as follows:—

<i>Group A.</i>	<i>Group B.</i>
Applied Mechanics	Applied Mechanics
Heat and Heat Engines	Theory of Structures and
Theory of Structures and Strength of Materials.	Strength of Materials
Electricity and Magnetism.	Heat and Heat Engines.
Drawing	Electricity and Magnetism.
Essay.	Engineering Chemistry.

All the papers of Group A must be taken. The papers of group B are harder and need not be taken to pass, but the regulations provide that in order to obtain a First Class a candidate must do well in two of them.

A candidate for the Mechanical Sciences Tripos should get clear of the Previous and of the Qualifying Examination in Mathematics and Mechanics as soon as possible, and he will then be free to devote himself to his Tripos.

The Student's Handbook to Cambridge, which should be consulted for detailed information (3s. net., Cambridge University Press) states.—A student who obtains honours in the Mechanical Sciences Tripos at the end of his third year is entitled to his B.A. degree, and possesses a professional qualification in respect of scientific knowledge which is held in high esteem by engineering employers and in particular is accepted by the Institution of Civil Engineers as sufficient for its Associate Membership. The practical experience which is necessary for every

engineer in addition to the theoretical knowledge is in most cases obtained subsequent to graduation in the course of an apprenticeship lasting two or three years in some engineering works. During this period the apprentice earns small wages ranging from 5s. to 30s. per week. Occasionally the employer requires a premium, but it is found that the majority of Cambridge engineering students can obtain apprenticeships without payment of a premium.

There is no doubt that the possession of a Cambridge degree in Mechanical Sciences Tripos carries with it a unique status it is a high-class qualification to which the attention of parents may wisely be directed.

At the University of London, University College.—The Engineering School is splendidly equipped. Composition fee for three years' course, 120 guineas, payable in three instalments, viz. — 1st Session, 45 guineas; 2nd Session, 40 guineas; and 3rd Session, 35 guineas. The Engineering Department includes Lectures, Drawing Classes, and practical work in the laboratories. The practical training given in the various Engineering Laboratories is specially arranged to make the students intimately acquainted with the nature and testing of the materials which they have afterwards to use in construction, the testing and use of the instruments for electrical measurements, the working of engines, dynamos, and machines, &c., under widely differing conditions, economical and uneconomical, and, generally, with the manner in which experiments in matters relating to Engineering Science are carried out.

General Certificate of Engineering.

To those students who have attended classes in the Engineering Department for not less than two consecutive Sessions, and whose attendance, conduct, and progress are considered satisfactory by the Faculty of Science, the College grants a General Certificate of Engineering. This Certificate contains a list of all the Classes in the full Engineering Course and shows which of them the student has attended, with the Class Certificates or other Honours which he has taken in each. It mentions also any Scholarship or Special Prize obtained by the Student and any special work done by him (in Laboratories or otherwise) during his stay at the College.

University Degree in Engineering

Students are strongly recommended to enter for the degree of Bachelor of Science in the Faculty of Engineering (B.Sc.) granted by the University of London. Three Examinations must be passed—the University Matriculation, Intermediate, and Final.

The Diploma Courses include all the subjects necessary for degrees in Engineering.

There are many valuable scholarships. Apply the Secretary for full particulars. Also see Appendix.

At King's College, London.—The Faculty of Engineering provides a course of study of University character for those intending to devote themselves to Engineering, Chemical Manufacture, or Metallurgy. It is so arranged as to give preparation for those wishing to take the B.Sc. in Engineering at the University of London.

All Students who intend working for the B.Sc. degree are strongly advised to sit for the Matriculation

Examination of the University (held each year in January, June, and September) before entering the College in October. They can then be registered as Internal students of the University of London, and eligible to take the Intermediate Examination in the College.

The Academic Year is divided into Winter and Summer Sessions, the former extending from October to Easter, and the latter from May to July.

The scientific principles which underlie all branches of Engineering, together with the methods of applying those principles, are taught in the following carefully arranged and graduated courses.

(1) A Four Years' Course for Mechanical and Electrical Engineers, the Winter Sessions being passed in the College and three Summer Sessions in "works." (2) A Three Years' continuous College Course for Mechanical and Electrical Engineers. (3) A Four Years' Course for Civil Engineers, a portion of the time being passed in "works." (4) A Three Years' continuous College Course for Civil Engineers. (5) A Three Years' continuous College Course for Mining Engineers and Metallurgists.

The Composition Fees for a course of either three or four years are 50 guineas per annum if paid in one sum at the commencement of the year, or 52 guineas per annum if paid in two instalments. There is, also, an Entrance Fee of £4 15s. 6d., which includes fees for Library, Athletic Ground, Locker, and Calendar.

Full particulars as to Scholarships, &c., may be obtained from the Secretary. Also see Appendix.

At the Armstrong College, Newcastle-upon-Tyne.—The training afforded at this College is of a most admirable type. The location of the Armstrong College in the very centre of the varied engineering industries of the Tyne gives students a unique advantage, and an earnest and determined man, after a training here, ought soon to be upon his feet. The College authorities are in close touch with the great firms of the North (*e.g.*, on the College Council are men like Lord Armstrong, Sir Andrew Noble, Sir Hugh Bell, Dr. Merz, and John Tweedy, Esq., &c), and the curriculum is thus kept in harmony with practical needs. The Engine-rooms are excellently equipped. The Board of Professors consists of men of the highest standing, and the Principal is Sir Isambard Owen, D.C.L., M.D., Hon Fellow of Downing College, Cambridge, Senior Deputy Chancellor of the University of Wales.

The fees are very moderate, and there are valuable Scholarships and Fellowships.

A student may either take a Degree Course or the Course for the College Diploma.

The Degree Course.—Armstrong College is a constituent College of the University of Durham. The Course for the B.Sc. in Engineering covers three years, and the Composition Fees are £20 for the 1st year, £25 for the 2nd year, and £26 for the 3rd year.

All students alike take the First Year Course in Mechanical Engineering, and then for the remaining two years to a large extent specialise in the department

they choose, viz.:—in Mechanical Engineering, Electrical Engineering, Civil Engineering, Naval Architecture, or Mining and Metallurgy.

The "Sandwich" system, *i.e.*, the combination, as far as practicable, of scientific instruction in the College with practical experience in the workshop and drawing office, is in successful operation in Newcastle. The following course is suggested:—

College, 1 Session, September to July	$\frac{3}{4}$ year.
Works, July to second following September	$1\frac{1}{4}$ years.
College, 2 Sessions, September to second following July	2 „
Works, July to second following January	$1\frac{1}{2}$ „
	—
Total	$5\frac{1}{2}$ years.
	—

This course is merely given as an example, and may be modified according to arrangement with the employer.

The following engineers and shipbuilders have promised to co-operate with the College by receiving pupils in the several departments of their works and in their drawing offices, and by permitting them to exclusively devote themselves during two or three sessions (as may be arranged) to their College studies. Parents and Guardians will make their own arrangements with Firms.

1. John Abbot & Co., Ltd., Gateshead-on-Tyne.
2. George Clark, Ltd., Sunderland.
3. William Doxford & Sons, Ltd., Sunderland.
4. J. H. Holmes & Co., Newcastle-on-Tyne.

5. R. & W. Hawthorn, Leslie & Co., Ltd., Newcastle-on-Tyne.
6. North-Eastern Marine Engineering Co., Ltd., Wallsend-on-Tyne.
7. C. A. Parsons & Co., Newcastle-on-Tyne.
8. Palmer's Shipbuilding & Iron Co., Ltd., Jarrow-on-Tyne.
9. John Readhead & Sons, South Shields.
10. Ernest Scott & Mountain, Ltd., Newcastle-on-Tyne.
11. Swan, Hunter & Wigham Richardson & Co., Walker-on-Tyne.
12. Wallsend Slipway & Engineering Co., Ltd., Wallsend-on-Tyne.
13. Clarke, Chapman & Co., Gateshead.

Courses for College Diploma.—Students who do not intend to proceed to a degree in Engineering Science are recommended to adopt one of the following courses of study:—

- (a) Engineering (including Electrical Engineering).
- (b) Civil Engineering.
- (c) Naval Architecture.
- (d) Mining.

Special College diplomas in these subjects will be granted to Students who follow the specified courses, and who attain a certain standard in the examinations. These diplomas are of two classes, the first class diploma being for a three years' course, and the second class diploma for a two years' course. It is

recommended that, wherever circumstances will admit of it, the three years' course be taken. The composition fees are for—

- (a) Two years' course, £22 the first year, and £28 or £30 the second year.
- (b) Three years' course, £22 the first year, £26 or £28 the second year, and £22, or £23, or £26 the third year.

For all particulars apply the Secretary, F. H. Pruen, Esq. Also see Appendix.

Attention is also drawn to the admirable courses of instruction given at the Universities of Edinburgh, Liverpool, and Glasgow, and at the Glasgow and West of Scotland Technical College. Mining and Metallurgy receive special attention at the Royal School of Mines, South Kensington, at the Wigan Mining and Technical College, and at the Armstrong College, Newcastle. We shall deal at greater length with this subject further on.

At the Crystal Palace School of Practical Engineering a very successful effort is made to teach theory and practice simultaneously. Several Engineers holding responsible posts have been trained here, and Sir William White, speaking at the award of Certificates in April, 1904, commented warmly upon the work, and added that at the Palace School, he was glad to say, practice and theory both had their due recognition. The fees for a year's course are, in one payment, £54 for Mechanical, £64 10s. for Civil Engineering and Electrical Courses: for the two years' course £108. Full particulars may be obtained from the Principal, Mr. J. W. Wilson. Consult Appendix.

If a student is anxious to carry out the suggestion made in the Report of the Committee of Engineers, referred to above, and take a year's preliminary practical work before going to College, he can do so on leaving School by proceeding to such an establishment as that of Mr. Hunter-Gahdy, at Mitcheldean, or by entering into a year's apprenticeship with Mr. A. S. Robinson, A.M.I.C.E., Barsham.

Other Institutions at which a good training is offered are the London City and Guilds Central Technical College, Exhibition Road, S.W.; the Universities of Birmingham, Manchester, Leeds, and Sheffield; University College, Bristol; the University Colleges of the University of Wales, at Aberystwyth, Bangor, and Cardiff; the Heriot-Watt College, Edinburgh; the various Polytechnics; "Faraday House," Southampton Row, &c. Parents can obtain full particulars by writing to the Secretary in each case.

III. The "Sandwich" System.—This is an attempt to meet the difficulties of the pupil system on the one hand, and the Technical College system on the other. Briefly it is, this:—A pupil, on payment of a premium, enters upon a five-and-a-half or six years' apprenticeship with a firm, and is allowed to "sandwich" a year or two in "works" with a year or two at College, dividing the time between "works" and College as may be deemed most advantageous. The system is in operation at some of the Scotch Colleges and, as we have explained above, at the Armstrong College of Science, Newcastle-on-Tyne, and full particulars may be obtained by consulting the College Calendars.

A grave objection to the "Sandwich" system lies in its expense, involving the premium to the firm, the cost of the College course, and the cost of maintenance for six years. The probable solution, however, of the difficulty of correlating practical experience in the workshop with training in scientific theory must be ultimately found in some modification or development of this last system. The pupil system is so firmly fixed in the traditions of British engineering that it is probably on this foundation that future developments must be based. The way at present is blocked by the custom of the payment of a premium. Such a custom is unknown in America, and it ought to be unknown in the United Kingdom. A few hundreds so obtained are obtained at heavy cost, when brains are excluded thereby from our works and real ability lost to the nation.

It would be well if the custom were abolished, for it places an embargo upon the skill which employers should endeavour to attract for the maintenance of our commercial position. Some firms of the highest standing, *e.g.*, Messrs. Yarrow & Co., Scotstoun, Glasgow, formerly at Poplar, have already made a beginning and accept no premium; their example, it is hoped, will soon have a wide-spread effect. Still, while the premium system largely prevails, parents will do wisely to select firms where their sons will receive real attention, and where scientific instruction goes, to some extent, hand in hand with the practical training. Such opportunities are afforded by Messrs. J. H. Holmes & Co., Newcastle; Messrs. Ernest Scott and Mountain, Newcastle; Messrs. Johnson & Phillips, Charlton,

Kent; The Brush Electrical Engineering Co., Loughborough; and, for a small number of special pupils, by Mr. A. S. Robinson, A.M.I.C.E., Barsham. See Appendix. If premiums were abolished, then firms might adopt some system similar to the excellent system that has obtained for half-a-century in H.M. Dockyards for the training of apprentices, and has produced men of the eminence of Sir William White, the late Director of Naval Construction. The Admiralty system may be briefly summarised as follows:—

Admiralty System.—Apprentices who enter the dockyards do so on the result of open competitive examinations held once a year in May by the Civil Service Commissioners. Age 14 to 16. The subjects of examination are:—(1) Arithmetic. (2) English, including handwriting, spelling, and composition, and Geography. (3) Geometry—Books I, II, III—and Algebra (up to easy quadratic equations). (4) Elementary Science; and (5) Drawing. Candidates must also pass a medical examination. If a lad succeeds, he enters on his apprenticeship and attends school two or three afternoons and evenings per week for ten months in the year, and receives regular instruction in a prescribed course. When not at school he is employed at work in the yard or shops, and his time is divided between the different departments so that he may become conversant with all branches of his work.

Competitive examinations are annually held among the apprentices of the same year; the best of them are selected, and continue their studies in the

same way for a second year, while the rest now aim at being just skilled mechanics; the same process of selection is made for a third year's study, and then, finally, the best apprentices—generally four or five—who head the list for the third year are retained for the fourth year's course, including the study of professional subjects in the drawing office. At the termination of this course a final examination is held between such apprentices in all the dockyards, and, upon the results, the Lords of the Admiralty choose a certain number to continue their study first at the Royal Naval Engineering College, Devonport, for one year, and afterwards at the Royal Naval College, Greenwich. Those who proceed to Greenwich eventually receive appointment in the Corps of Naval Constructors or the Engineering Staff of the Navy.

Mr. B. C. Laws, Assoc M Inst. C.E., recently remarked:—"For more than half-a-century the dockyard schools have trained primarily all the professional officers at the Admiralty and the dockyards, and have produced men who have filled various important positions in all parts of the world. At home the best firms have been, and are, associated with the names of men who have passed through this training, and the highest positions in Lloyd's Register and the Board of Trade have been held by men from the same source."

Systems on somewhat similar lines, and conceived in a large and generous spirit, have been introduced by Messrs. Yarrow & Co, Scotstoun, Glasgow; Messrs. Denny Bros., Dumbarton; Messrs David Rowan and Co., Glasgow; and others. The Great Eastern and

South Western Railway Companies have systems in vogue whereby their apprentices are able to avail themselves of day courses of study in the London Technical Institutes. Messrs. Vickers, Sons, and Maxim have a good system in operation for the drawing office apprentices in their Naval Construction Works, Barrow-in-Furness. Apprentices, who must be between 15 and 18 years of age, are admitted into the Ship Drawing Office after an examination in Mathematics (Elementary Stage), Plain and Solid Geometry (Elementary Stage), and Dictation. Apprenticeships are for five years, and the salary is at the rate of five, six, seven, nine, and twelve shillings per week. Apprentices are expected to attend Science Classes in Naval Architecture, Advanced Mathematics, Theoretical Mechanics, Applied Mechanics, and Steam, and success in the examination in these subjects will result in an addition to pay ranging from sixpence to six shillings per week.

Perhaps the best conceived scheme that has been proposed is that which is recommended by the North-East Coast Institution of Engineers and Shipbuilders. It seems to meet all existing difficulties: the door is not closed to the youth who cannot afford to pay a premium as a pupil, and at the same time the working apprentice has a chance to rise; work in the shop is closely linked with adequate instruction in scientific theory, and the trained pupil receives a decent wage.

If this scheme were generally adopted, it would result in an immense advantage to British Engineering. For the information of parents we insert an outline of the scheme.

North-East Coast Scheme.—Youths are divided into two classes, one being ordinary apprentices, whose object is to qualify as tradesmen, mechanics, or artisans; and the other, “pupils,” who enter works with the view of ultimately rising into the higher branches of the profession of engineering or ship-building, and will attend a systematic course of instruction at University College day classes.

Incentives for Apprentices.—The scheme for apprentices provides that preference shall be given to youths bringing the best certificates of conduct and character, and that the age of starting shall be from 15 to 16 years. Each apprentice shall be awarded marks for approved examinations passed, for time-keeping, and for good conduct, perseverance, and progress. An apprentice obtaining 60 marks will get sixpence per week more in the ensuing year, and more in proportion to the increase in marks. Promotion in the workshops will depend upon marks obtained, and should an apprentice during his first three years have shown marked ability at evening classes and obtained maximum marks for time-keeping, perseverance, and progress in the workshops, he may be allowed to spend his fourth or fifth year at College day classes, the fees of which will be paid by his employer. At least one vacancy per annum in the drawing office will be filled by the apprentice obtaining the highest marks.

The Terms for Pupils—The regulations for pupils are under three heads, viz.:—

(A) Youths who enter the works after a three or four years’ engineering day course at a

University College, and have obtained an approved certificate or a pass degree in engineering science or naval architecture. These will serve three years' pupilage, and for the first year be paid as ordinary apprentices in the third year, and for the other two years have three shillings and five shillings per week added to ordinary apprentices' pay.

(b) Youths desiring to combine workshop experience and College study, must produce evidence of preparatory education, and will then be admitted to a six years' pupilage, during which time they will attend a University College for three academical years. Their pay will be that of ordinary apprentices, plus four shillings per week in the year after their first year's College training.

(c) Youths who, having entered the works as apprentices, succeed during their apprenticeship in passing the matriculation or equivalent examination, will for the remainder of their time be treated as under the second scheme.

Further information may be obtained from the Secretary, John Duckitt, Esq., 4 St. Nicholas Buildings West, Newcastle-upon-Tyne.

Whitworth Scholarships.—These valuable Scholarships and Exhibitions were founded by the late Sir Joseph Whitworth for the further instruction of apprentices in Mechanical Engineering. They are open to competition to any of H.M. subjects who are under 26 years of age on the 1st of May. Four scholarships of the value of £125 a year and

tenable for three years are offered annually, and about thirty exhibitions of the value of £50 for one year. Candidates must have been engaged in handicraft in the workshop of a Mechanical Engineer for at least three years, and have been at work at the vice and lathe, or the forge, or the bench, for at least six consecutive months in each of those years, and they must have spent at least twelve months altogether at the vice and lathe. Full particulars can be obtained by applying to the Secretary, Board of Education, South Kensington, S.W.

Other Scholarships.—Royal Exhibition (1851) Scholarships (value £150 per annum and tenable for two or three years) and Probationary Bursaries (value £70 for one year) are offered at certain Colleges (*eg*, the Armstrong College) Consult the College Calendars

The Surveyors Institution offer Scholarships of the value of £80 at Cambridge and of £50 at Bangor and Newcastle to facilitate the education of Surveyors in branches of scientific knowledge cognate to their profession Apply the Secretary, 12 Great George Street, S W

Similar Scholarships are offered by the Institution of Electrical Engineers, 92 Victoria Street, London, S W , and in Naval Architecture by the Institute of Naval Architects, 5 Adelphi Terrace, London, W C , and by the Committee of Lloyd's Register, 71 Fenchurch Street, London, E C

Electrical Engineering —In view of the vast and increasing development of Electrical Engineering, it is necessary to deal somewhat fully with this

important branch of the profession. We have already pointed out how necessary a mechanical training is for the electrical engineer, in fact, it is within the truth to say that some of our best electrical engineers of to-day are men who were, first of all, trained as mechanical engineers, and then 'added electrical training to their existing knowledge. An ideal course for a youth who intends to take up electrical engineering is to pass through the practical training of the workshop, then go to an Engineering College for a course of instruction in the lecture rooms and laboratories, and finally enter some good firm of electrical engineers as an improver. Another course would be for a youth to remain at School until 17 or 18, then proceed to College for a three years' degree course, and afterwards go into "works" for two or three years, and then, finally, seek at College a further training in scientific theory. This would mean a long course, but electrical science is a vast subject, and the years thus spent would be spent to good purpose. In seeking his theoretical training it is important that a student should choose a University or College, where he can come under the inspiration of a Professor who has an assured reputation in the Scientific world. Contact with such men means keenness, and it is only by keenness and hard work that the young engineer can succeed. Moreover, such men are always in touch with good firms, and their recommendation may give an earnest and capable man his start, and it is often *le premier pas qui coûte*. It would be invidious to mention names, but Professors of this type are to be found at Cambridge, Edinburgh, Glasgow, Newcastle, Manchester, Liverpool, Birmingham, and London.

Electrical engineering falls into the following sub-divisions, and a youth will choose one or more, according to his bent, for special attention:—

- (1) *Electric Lighting*.—This will include the lighting of towns from large central stations; putting up plants for independent lighting in country houses, &c.; house wiring and fitting; ship fitting, &c.
- (2) *Electric Traction*.—Electric trams and electric trains—these indicate the directions in which electric traction has developed so wonderfully within recent years, and is destined to develop still more wonderfully in the near future.
- (3) *Transmission of Electric Power*.—The electric power of the Falls of Niagara is transmitted to Buffalo City, and the same idea—the production and transmission of electric power—is being carried out on a smaller scale in Great Britain by the Midland Electric Power Corporation, by the County of Durham Electric Supply Scheme, the Clyde Valley Electrical Power Scheme, &c.
- (4) *Telephony, Telegraphy, and Wireless Telegraphy*.—Good openings in this direction offer in the Post Office, with the Telephone Companies, and with Municipalities, *e.g.*, Glasgow, Brighton, Belfast, &c., who have a licence to set up their own telephonic systems. Whether wireless telegraphy will ever become as useful as its advocates believe we cannot at present tell; if it does, it will open out another great avenue to the electrical engineer.

- (5) *Electro-Chemistry*, which includes gold, silver, and nickel-plating, copper refining, galvanising, &c. This is the field for a lad who combines a love of chemistry with a bent towards engineering.

Mining and Metallurgy.—This is an important department about which we find that information is desired. We would point out that it is imperative that a young man should go to a place of training where practical work is combined with scientific instruction. We will deal at some length with three typical Institutions—the Royal School of Mines, South Kensington; the Wigan Mining and Technical College, Lancashire; and the Armstrong College, Newcastle-on-Tyne.

The diplomas of these Institutions are all approved by the Home Secretary for the purposes of the Coal Mines Regulations Acts, 1887, Amendment Act, 1903, and so they are valuable toward securing the Coal Mines Manager's Certificate.

Under Section 23, Sub-Section 1 of the Coal Mines Regulation Act, 1887, no person can obtain a certificate unless "he shall have had practical experience in a mine for at least 5 years" By the Amendment Act, 1903, in the case of candidates who have received a Diploma in scientific and mining training, or a degree which includes scientific and mining subjects, the period of practical experience will be reduced from five to three years

At the Royal School of Mines the training afforded is very thorough. The Royal School of Mines is incorporated with the Royal School of Science; these two Institutions, with the London City and Guilds Central Technical College, will shortly become the Imperial College of Science and Technology. The course of instruction lasts for three years. The

Associateship is granted in Mining and in Metallurgy. A student obtains the Associateship who passes in all the subjects of the first year, and, in the second and third year, in those subjects prescribed as necessary for the Division in which he seeks his Associateship.

Without some preliminary knowledge of mathematics, mechanics, chemistry and physics, it is not possible for students to follow the courses with advantage. No candidate for the Associateship will be admitted as a fee paying student unless he [has obtained a first-class in the first stage of Mathematics (or Practical Mathematics), Practical Plane and Solid Geometry, Mechanics (Solids and Fluids), Chemistry (Theoretical), Sound, Light and Heat, and Magnetism and Electricity, or a pass in some higher stage of those subjects, at the examinations of the Board of Education, South Kensington, or] *can show to the satisfaction of the Council of the College, by having passed the Examinations of other recognised Institutions or Examining bodies, that he possesses the necessary elementary knowledge of those subjects.* This latter paragraph will remove all difficulty in the way of a well educated Public School boy.

Information respecting the examinations of the Board of Education, South Kensington, which are held annually in April, May and June, will be found in the Regulations of the Board for Evening Schools, Technical Institutions and Schools of Art and Art Classes, and enquiries relating to them, should be addressed to the Secretary of the Board of Education, South Kensington, London, S W.

Students who are not candidates for the Associateship are permitted to enter as Occasional students in one or more special branches of Science, providing they possess some preliminary knowledge of the subject they propose studying, and so far as there is room.

Application for admission to the College must be made on Form 1289, obtainable from the Registrar, and be sent before the middle of June, for admission in the following October. In this form a statement should be given of the studies which the applicant has already pursued, the examinations he has passed, and the names of a teacher or teachers to whom reference may be made. This application will be considered by the Council of the College, who will decide whether or not the candidate can be admitted.

Students must be free from any organic disease or physical defect that would interfere with their studies

The Session is divided into two terms. The first term begins about the first week of October and ends about the middle of February. The second term begins in the middle of February and ends about the middle of June.

The hours of study are from 10 a.m. to 1.15 p.m., and from 2 to 4 or 5 p.m., according to the subject of study, every day, except on Wednesday and Saturday, when the College closes at 1 p.m.

The fees of Students entering for the Associateship course amount to a total of from £105 to £115 in the three years.

A certain number of Royal Exhibitions, National Scholarships, and Free Studentships, tenable at the College, are awarded by competition at the examinations of the Board of Education, South Kensington.

The Associateship in Mining will not be awarded to a student until he has completed, in all, six months' practical experience of underground work in a mine, of this, one half at least must be completed before the student attends the lectures on Mining, one half of the whole time should have been spent at a colliery and the other at an ore mine. The six months' practical experience shall mean at least 120 visits underground, each lasting 6 hours underground.

In selecting a mine for practical work the student should consult the Professor of Mining or the Instructor in Mine Surveying.

Each student must keep a diary, stating how he has been employed and must make careful notes and sketches while engaged in this practical work. These must be handed to the Instructor in Mine Surveying in the first fortnight of October each year, the diary must be counter signed by the managers of the mines at which the student has worked. Diary forms must be obtained from the Registrar or from the Instructor in Mine Surveying before the vacation. Marks may be awarded for the note books.

It is not advisable that the student should make tours in mining districts at home or abroad until he has attended the course of lectures in his third year.

In the final examination in Mining, regard will be had to the proficiency of the student in assaying and surveying. No student can pass in Mining unless he has qualified in these two subjects, and it is likewise necessary that he should pass the examination in part I of Metallurgy.

It is necessary that every mining student should obtain the certificate of the St. John Ambulance Association, and be thus qualified to render first aid to the injured. Instruction in ambulance work by a properly qualified medical man is provided by the Board. For further information, see the prospectus of the Royal College of Science, price 6d. (by post 9d.), obtainable by post from Wyman and Sons, Ltd., Fetter Lane, London, E.C.

At the Wigan Technical College special opportunities are afforded for acquiring a thorough practical knowledge of Coal Mining. The fees are 30 guineas per session for the first, second, and third years' courses. Students desirous of taking the diploma course must not be less than 16 years of age, and must pass an entrance examination. The College has always enjoyed the generous support of the various Colliery Owners and their Managers. As there are Collieries within ten minutes' of the College exceptional facilities are offered to students for every detail of Coal Mining. Consult Appendix.

At the Armstrong College, Newcastle, students can take either their B.Sc. in Mining and Metallurgy or the College Diploma in those subjects. Before this end can be attained they must shew sufficient knowledge of Coal and Metal Mining, and produce satisfactory evidence that they have spent at least four months in and about a mine. Professor Louis is in charge of the Department, and his students have obtained valuable posts in Mining both at home and abroad.

CAREERS FOR OUR SONS.

Marine Engineering.—The student who intends to devote himself to Marine Engineering or Naval Architecture should proceed for training to some great centre of ship-building—the Lersey, or the Tyne, or the Clyde. The University of Liverpool, the Armstrong College, Newcastle (where Professor Welch has been appointed to the recently vacated professorship of Naval Architecture), the University of Glasgow, and the Glasgow and West of Scotland Technical College all provide excellent courses.

At these different centres eminent firms offer students facilities of acquiring practical acquaintance with their work. We may instance, as two good types, the Regulations for the Admission of Pupils and Apprentices that obtain at the works of Messrs. Yarrow & Co, Scotstoun, Glasgow, and those at the works of Messrs Swan, Hunter and Wigham Richardson, Walker-on-Tyne

MESSRS YARROW & Co —

1 PUPILS—No premium is required. All are required to start work at 6 a.m., and are liable to dismissal if at any time their conduct is not deemed satisfactory. They are expected to reside within a two mile radius of the Works. There are three schemes in operation —

SCHEME A—For those who have taken an Engineering degree or its equivalent. Time to be served 3 years. Pay 20s weekly on entry with an annual increase of 5s a week.

SCHEME B—For those who have not an engineering degree, but are able to pass an examination conducted by an examiner appointed by the Firm. Time to be served 4 years. Pay 10s weekly on entry with an annual increase of 5s. a week.

SCHEME C—Under this scheme the pupil spends the winter months at a University or Technical College, and the summer

VII.—ENGINEERING.

months in practical work in the shops. Rate of pay, while in the shops, 10s. weekly for the 1st year, rising gradually to 30s. a week.

2. APPRENTICES.—They begin at 16 years of age or under. Proof of fitness to be given from school career. Pay for the 1st year 6s. per week, advancing 2s. a week annually. Apprenticeship to end at the age of 21. Every facility given for attending evening classes

MESSRS SWAN, HUNTER & WIGHAM RICHARDSON:—

1. APPRENTICES.—A. Should an apprentice during the early years of his apprenticeship show more than average ability in his studies at the evening classes, and have obtained maximum marks for time-keeping, good conduct, and progress in the works, he may, at the discretion of the firm, be allowed to attend a session at College day classes. In certain cases the College fees will be paid by the firm.

B. Youths whose conduct is entirely satisfactory and who, having entered the works as apprentices as above, succeed during their apprenticeship in passing the matriculation examination required for graduation in engineering science at a Science College of University rank, or an equivalent examination, may, at the discretion of the firm, be transferred to the pupil grade and be at liberty to attend a full College day course. After promotion to this grade their rates of pay while in the Works will be increased from 4s. to 6s. per week above the rates of ordinary apprentices for the corresponding years.

The time served, including that spent in College, will be a minimum of six years.

In selecting under this clause the firm will give a preference to the sons of workmen and other employees of the firm.

2. PUPILS.—C. Youths who enter for the purpose of combining workshop experience with College Study, and who hold no degree from a University College may be admitted to the Works as pupils, on the production of evidence that they have received a sufficient preparatory education. A certificate shewing they have passed the matriculation examination required for graduation in Engineering Science at a Science College of University rank, or an equivalent certificate will be accepted as evidence of this.

Marine Engineering.—The student who intends to devote himself to Marine Engineering or Naval Architecture should proceed for training to some great centre of ship-building—the Mersey, or the Tyne, or the Clyde. The University of Liverpool, the Armstrong College, Newcastle (where Professor Welch has been appointed to the recently established professorship of Naval Architecture), the University of Glasgow, and the Glasgow and West of Scotland Technical College all provide excellent courses.

At these different centres eminent firms offer students facilities of acquiring practical acquaintance with their work. We may instance, as two good types, the Regulations for the Admission of Pupils and Apprentices that obtain at the works of Messrs. Yarrow & Co, Scotstoun, Glasgow, and those at the works of Messrs Swan, Hunter and Wigham Richardson, Walker-on-Tyne.

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MESSRS. SWAN, HUNTER & WIGHAM RICHARDSON:—

1. APPRENTICES.—A. Should an apprentice during the early years of his apprenticeship show more than average ability in his studies at the evening classes, and have obtained maximum marks for time-keeping, good conduct, and progress in the works, he may, at the discretion of the firm, be allowed to attend a session at College day classes. In certain cases the College fees will be paid by the firm.

B. Youths whose conduct is entirely satisfactory and who, having entered the works as apprentices as above, succeed during their apprenticeship in passing the matriculation examination required for graduation in engineering science at a Science College of University rank, or an equivalent examination, may, at the discretion of the firm, be transferred to the pupil grade and be at liberty to attend a full College day course. After promotion to this grade their rates of pay while in the Works will be increased from 4s. to 6s. per week above the rates of ordinary apprentices for the corresponding years.

The time served, including that spent in College, will be a minimum of six years.

In selecting under this clause the firm will give a preference to the sons of workmen and other employees of the firm.

2. PUPILS.—C. Youths who enter for the purpose of combining workshop experience with College Study, and who hold no degree from a University College may be admitted to the Works as pupils, on the production of evidence that they have received a sufficient preparatory education. A certificate shewing they have passed the matriculation examination required for graduation in Engineering Science at a Science College of University rank, or an equivalent certificate will be accepted as evidence of this.

They must give an undertaking that they will attend, for at least three academical years, the degree course of study at a University College during the currency of their pupilage. The term of pupilage will extend over a period of six years, including the time spent at College.

Their pay will be that of ordinary apprentices in the corresponding years, plus 4s per week in years subsequent to their first year's College training.

D Youths who have passed through a three or four years' engineering day course at a University College, and who have obtained therefrom either an approved certificate, or a pass degree in Engineering Science, or in Naval Architecture, may be admitted into the Works as pupils at the discretion of the firm.

They will serve a three years' pupilage, and for their first year the scale of pay will be that of an ordinary apprentice of the third year. The scale of pay for their last two years will be that of ordinary apprentices of the fourth and fifth years, plus 3s. and 5s per week respectively.

Those who hold a degree with honours may be admitted on the same conditions as the above, but the scale of pay for the last two years will be increased by 4s and 7s per week instead of 3s and 5s.

Municipal Work.—In addition to posts as Managers of Gas Works, who are generally men of good scientific training, and Managers of Electric Stations, with whom we have dealt, a few words are necessary as to the posts offered in Municipal Engineering as Borough Surveyors. A youth who is aiming at this career should remain at School until he is 17 or 18, and pass some such qualifying examination as the Senior Oxford or Cambridge Local, or the London Matriculation. He can then either be articulated forthwith for three or four years to a Borough Surveyor, at a premium ranging from £100 to £500, or, if he elects to go to an Engineering College, he will be excused perhaps two years of his articles and

be accepted at a reduced premium. As soon, as possible—he cannot do so until he is 22—he should endeavour to pass the examination of the Incorporated Association of Municipal and County Engineers (11 Victoria Street, S.W.). The subjects in their order of importance are:—

1. Civil Engineering, as applied to Municipal Work.
2. Building Construction and Materials.
3. Sanitary Science, including Water Supply.
4. Municipal and Local Government Law.

In order to pass, a candidate must obtain 50 per cent. of the total marks. After remaining for some years with a Borough Surveyor, a young man, when between 27 and 35 years of age, should seek a post as Assistant, which will be a stepping-stone to a post as Municipal Surveyor. Such vacancies are advertised from time to time in papers like the "Surveyor." As an Assistant he must keep his object steadily in view, and make himself indispensable to his chief. The Provinces offer the best training ground; and small towns are best, as the experience to be gained is more varied because the work is not departmentalised to the same extent as it is in London and other very large towns. When he has secured an appointment as a Borough Surveyor his position will improve according to his worth.

Most Municipal Engineers of eminence seek the Associateship, and finally, the Membership of the Institution of Civil Engineers, and some are also Fellows of the Royal Institute of British Architects,

and the varied character of Municipal work render such qualifications very desirable. A Municipal Engineer has manifold responsibilities: he must keep all roads, bridges, and sewers in good repair; he must advise his Council about all new buildings, and about contraventions of their bye-laws, involving, at times, legal action. He may have to construct a refuse destructor, or a concert hall, or a light railway, plan a rifle range, or lay out a bowling green. He must possess tact and courtesy and knowledge of men, for one of his duties will be to attend all Council and Committee meetings.

Indian Public Works Department.—The Royal Engineering College, Cooper's Hill, is now closed, and the opportunity of offering for this important department of public service is within the reach of every well-trained Engineer. The subject is of such wide importance that it will be well to deal with it fully. Vacancies are announced from time to time in the public press. The Regulations as to the appointment of Assistant Engineers in 1908—and they will be similar in future years—are as follow:—

1 The Secretary of State for India in Council, will, in the summer of 1903, make not less than 39 appointments of Assistant Engineer in the Public Works Department of the Government of India

In making these appointments he will act with the advice of a Selection Committee, including at least one eminent representative of the Engineering Profession

2 Applications for the appointments must be made on a printed form to be obtained from the Secretary, Judicial and Public Department, India Office, Whitehall, London, S.W., and to be returned

so as to reach him not earlier than 1st March, 1908, or later than Friday, the 1st May, 1908.

No applications received after the latter date will be considered.

3. Candidates must have attained the age of 21 and not attained the age of 24 years on the 1st July, 1908.

4. Every candidate, except as provided in Regulation 5, must be a British subject of European descent, and at the time of his birth his father must have been a British subject, either natural-born or naturalised in the United Kingdom. The decision of the Secretary of State in Council as to whether a candidate satisfies this condition shall be final. He must also be of good moral character and sound physique.

5. Natives of India who are British subjects are eligible for appointment, provided that the total number of natives of India appointed in any year under these regulations shall not exceed 10 per cent. of the total number of Assistant Engineers thus recruited.

6. Candidates must have (1) passed the A.M.I.C.E. examination or obtained one of the University degrees mentioned in Appendix I, or (2) obtained such diploma or other distinction in Engineering, as may, in the opinion of the Selection Committee, be accepted as approximately equivalent thereto.

It will, therefore, be for the Selection Committee to decide, in dealing with the applications, whether they will recommend any candidate under head (2).

7. It is desirable that candidates should have had some experience as assistant in the preparation of the designs for, or in the execution of, some engineering work of importance.

8. Candidates must be prepared, if called upon, to attend at the India Office, at their own expense, for a personal interview with the Selection Committee.

9. They will further be required, before final appointment by the Secretary of State in Council, to appear before the Medical Board at the India Office for examination as to their physical fitness for service in India.

A copy of the "Regulations as to the Physical Examination" of candidates for Indian appointments will be forwarded on application to the Under Secretary of State.

10. Candidates will also be required, before final appointment, to satisfy the Secretary of State, in such manner as he may determine, of their ability to ride.

11. They will, on appointment, be provided with free first-class passages to India, and they will be expected to proceed thither about the end of September, 1908.

Their pay will begin from the date of their landing in India, and, if they so desire, they will be able to obtain in India an advance of two months' pay, recoverable by monthly instalments of one-third of salary.

12. They will enter the Service as Assistant Engineers, Third Grade, on a salary of Rs.4,200 a year (equivalent to £280 a year, when the rupee is at 1s. 4d.)

13. The instruments required by Assistant Engineers are supplied to them in India.

14. Particulars as to their prospects of pay, pension, &c., are contained in Appendix II.

NOTE FOR THE INFORMATION AND GUIDANCE OF CANDIDATES.

The Selection Committee of 1906 drew attention to the subjects which were held to be of most importance for the Public Works Service, viz.,

Pure Mathematics, including a knowledge of the differential and integral calculus.

Applied Mathematics.

Geometrical and Engineering Drawing.

Surveying and Geodesy.

Strength of Materials and Theory of Structures.

Hydraulics.

Heat Engines.

Materials used in Construction.

Building Construction.—Wood and metal work, limes and cements, and building with stone, brick, and concrete.

Knowledge of the Principles of road-making, waterworks, sanitary and railway engineering. (Important.)

The Selection Committee were further of opinion that all candidates should have had some workshop training.

The following Announcement regarding the recruitment of the Public Works Department in future years is published for the information of intending candidates —

- (i) *The foregoing Regulations apply only to the appointment of Assistant Engineers in the permanent establishment of the Public Works Department in 1908, but it is the intention of the Secretary of State for India in Council, as at present advised, to recruit the permanent establishment of the Department in succeeding years on the same general lines as those already laid down.*

He is, however, unable to give any undertaking that the Regulations will remain unaltered in the future.

APPENDICES.

APPENDIX I

LIST OF DEGREES REFERRED TO IN PARAGRAPH 6

University of London — B Sc (Engineering)

University of Cambridge — B A (Mechanical Sciences Tripos).

University of St Andrews — B Sc (Engineering)

University of Glasgow — B Sc (Engineering)

University of Edinburgh — B Sc (Engineering)

Victoria University of Manchester (or Victoria University) — B.Sc. (with honours in Engineering)

University of Liverpool — B Eng, provided the degree be obtained by passing the Examinations of the University

University of Leeds — B Sc (with honours in Engineering), in respect of degrees which may be granted on the results of the examinations in June 1905, or later

University of Birmingham — B Sc (Engineering), provided the Engineering Matriculation Examination be passed on entering upon the course of study

University of Dublin — B. A I

Royal University of Ireland — B E and M E

University of Wales — B Sc (Engineering); provided that Mathematics be passed at the Final Examination for the degree

Any other degree of a University in the United Kingdom which may hereafter be recognised by the Council of the Institution of Civil Engineers as exempting from passing the examination for Associate membership.

APPENDIX II.

**PARTICULARS REGARDING THE INDIAN PUBLIC WORKS DEPARTMENT
(EXECUTIVE BRANCH)**

(The arrangements and salaries hereinafter described are subject to revision according to the requirements of the Service)

1 The Engineer Establishment of the Indian Public Works Department consists of a staff of engineers, military and civil, engaged on the construction and maintenance of the various public works undertaken by the State in India

2 The permanent establishment of the Department is recruited from the following sources —

- (1) Officers of Royal Engineers
- (2) Persons appointed to the Imperial Service by the Secretary of State by selection from the United Kingdom.
- (3) Persons educated at the Government Civil Engineering Colleges in India, and appointed to the Provincial Services by the Government of India
- (4) Occasional admission of other qualified persons

3 The various ranks of the Department are as follows —

	Salary per Annum (Imperial Service) Rs
Chief Engineers, First Class	33,000 i.e., £2,200
Second Class	30,000
Superintending Engineers, First Class	24,000
Second Class	21,000
Third Class	18,000
Executive Engineers, First Grade	12,000
Second Grade	10,200
Third Grade	8,400
Assistant Engineers, First Grade	6,600
Second Grade	5,400
Third Grade	4,200 i.e., £280

4 Officers who are finally selected from the United Kingdom for appointment to the Indian Public Works Department will, in the absence of any special reasons to the contrary, be appointed to the rank of Assistant Engineer, Third Grade.

They will cease to draw exchange compensation allowance when they rise to the rank of Superintending Engineer and thereafter, whether permanently or officiating.

5. Promotions from one grade or class to another are dependent on the occurrence of vacancies in the sanctioned establishment, and are regulated in the following way.

6. In the Civil Works Branch of the Department, promotions throughout all grades in Madras and Bombay are made by the Governments of those provinces respectively; in Bengal, the United Provinces of Agra and Oudh, the Punjab, and Burma, promotions are made by the Provincial Governments, except as regards the appointments of Chief and Superintending Engineer, which are made by the Government of India; in the other provinces* promotions are made by the Government of India on one general list for all these provinces.

7. In the Railway Branch of the Department promotions are made by the Railway Board, except as regards the appointments of Chief and Superintending Engineer, which are made by the Government of India.

8. Promotion is made wholly by selection; mere seniority is considered to confer no claim to it.

PENSIONS AND PROVIDENT FUND.

9. The following is a summary of the principal pension rules applicable to Engineers appointed to the Imperial Service by the Secretary of State from the United Kingdom.

An officer is eligible for a pension on voluntary retirement after completing 20 years' qualifying service or attaining the age of 55 years; this will range from £350 to a possible maximum of £525. If at an earlier date he is compelled to retire from the Service through ill-health, not occasioned by irregular or intemperate habits, he becomes eligible for an invalid pension or a gratuity according to the length of his service.

Subject to certain prescribed conditions, rupee pensions are now issued at the rate of exchange of 1s. 9d. the rupee to pensioners residing in countries in which the Indian Government rupee is not legal tender.

*Eastern Bengal and Assam, Central Provinces (including Berar), Coorg, Rajputana and Central India, and Baluchistan.

10. A provident fund has been established for all Civil Engineers of the Department on the following basis —

- (1) The contribution is compulsory up to 5 per cent, on salaries, with voluntary contributions of a further five per cent.
- (2) Compound interest on such payment is annually credited by Government to each officer subscribing, the rate being at present 4 per cent per annum in the case of accounts kept on a rupee basis, and 3 per cent per annum in the case of those kept on a sterling basis. Members of the Fund are given the option of having their accounts kept either on the rupee or on a sterling basis.
- (3) The sum which thus accumulates to the credit of an officer is his absolute property, subject to the rules of the Fund, and is handed over to him unconditionally on quitting the Service, or in the event of his death before retirement, to his legal representatives.

LEAVE

11 The following is a summary of the principal regulations relating to the leave admissible to Engineers appointed to the Imperial Service by the Secretary of State from the United Kingdom

(a) Short Leave

12 Privilege Leave is a holiday which may be granted to the extent of one eleventh part of the time that an officer has been on duty without interruption, and it may be accumulated up to three months, earned by 33 months' duty. During privilege leave the officer retains a lien on his appointment, and receives an allowance equal to the salary which he would receive if he were on duty in the appointment on which he has a lien. An interval of six months must elapse between two periods of absence on privilege leave.

Privilege leave may be prefixed to furlough, special leave, or extraordinary leave without allowances. The whole period of leave thus taken in combination is known as combined leave. Combined leave cannot be granted for a shorter period than six months, nor, except on medical certificate, may be extended beyond two years.

13. Extraordinary Leave without allowances may be granted in case of necessity, and, except in certain specified cases, only when

no other kind of leave is by rule admissible. It may be granted in continuation of other leave.

14. **Subsidiary Leave**, usually with half average salary, may be granted to an officer proceeding on or returning from leave out of India, or on retirement, to enable him to reach the port of embarkation or to rejoin his appointment. It is admissible only at the end, and not at the beginning, of combined leave.

15. **Short leave** is also granted to enable officers to appear at examinations, &c.

(b) Long Leave.

16. Furlough and special leave with allowances (see paragraph 6) are admissible to an aggregate maximum amount of six years during an officer's service. The amount of furlough "earned" is one-fourth of an officer's active service, and the amount "due" is that amount less any enjoyed.

Furlough without medical certificate can, if due, be generally taken after eight years' active service, and again after intervals of not less than three years' continuous service. It is limited to two years at a time.

Furlough on medical certificate may be granted (a) to an officer who has rendered three years' continuous service, for not more than two years, but capable of extension up to three years, and (b) to an officer who has not rendered three years' continuous service, up to one year in any case, and up to such longer period, if any (but not exceeding two years), as the officer may have furlough "due" to him.

17. The allowances admissible during furlough are:—

- (1) During the first two years of furlough without medical certificate and during so much of furlough with medical certificate as may be "due,"—half average salary subject to certain maximum and minimum limits.
- (2) After the expiration of the period for which the foregoing allowances are admissible,—one quarter of average salary, subject to certain maximum and minimum limits.

18. **Special Leave** may be granted at any time for not more than six months, with intervals of six years' service; allowances, calculated as during furlough, are given during the first six months only, whether taken in one or more instalments.

General Rules.

21. Leave of absence can never be claimed as of right, and is given or refused at the discretion of Government.

22. After five years' continuous absence from India, an officer is considered to be out of the employment of Government.

23. When leave allowances are paid at the Home Treasury, or in a Colony where the standard of currency is gold, rupees are converted into sterling at the rate of exchange fixed for the time being for the adjustment of financial transactions between the Imperial and Indian Treasuries, unless any other rate has been exceptionally authorised. But for the present the rate of conversion is subject to a minimum of 1s. 6d. to the rupee.

General Summary.—When a young student has completed his training, whether at a Technical College or in “works,” or, better still, in both, he will choose one or other of the branches of engineering of which we have spoken. In Mechanical Engineering he has a wide range of choice, from a small firm turning out some special kind of machinery, to great works like those of Messrs. Mather & Platt; Messrs. Vickers, Sons, & Maxim; or Messrs. Armstrong, Whitworth and Co., at Elswick. If Shipbuilding, or Mining, or Electricity specially attract him, he will be guided in his choice by his own inclinations and by his opportunities, and if he resides in a manufacturing or mining or shipbuilding centre, he will naturally seek an opening in the branch more particularly pursued in his locality. If he decides on Civil (or Constructive) Engineering, he will seek admission as a pupil into the office of a Civil Engineer of standing, whether in London or the provinces, and hope by his recommendation later on to secure a subordinate post on some waterworks or sewage disposal scheme, or on dock, or harbour, or bridge construction. If he is drawn to railway work,

he will, after practical training in a locomotive shop, become a pupil with the Engineer-in-Chief of some large Railway Company, and, after gaining experience under his guidance, may obtain a similar post with a smaller company at home, or secure one of the many posts abroad that are offered in the opening up of new countries by railway systems.

We have already dealt with the important subjects of Municipal Engineering and the Indian Public Work's Department.

In the Mercantile Marine posts as Engineers on our large steamships offer wide opportunities. A year at sea is often recommended to all types of Engineers for the valuable experience it gives in developing confidence and resource.

Engineer Officers in the Royal Navy now enter the Service (as we have explained in our chapter on the "Navy") under the same conditions as all other branches of the Service, viz., as Naval Cadets. The rank of the Engineer Officer has been assimilated to the corresponding rank of the Executive Officer. The pay and allowances of Engineers is much improved, and the possibility of rising to the command of a ship is now within the reach of a Midshipman who desires to specialise in Engineering.

Prospects.—We now proceed to consider the prospects that lie before the young engineer in the different branches of the profession:—

- (a) *Civil Engineering.*—As an assistant under a resident engineer on works under construction he will receive from £100 to £200 per annum.

When he has "won his spurs" he may expect as an engineer-in-charge from £400 to £1,000.

A consulting engineer, who has made a name for himself and stands high in the profession, will command an income of several thousands.

A borough engineer will receive from £100 in a small rural district to the substantial sum of £2,000 per annum paid to the Chief Engineer to the London County Council. In a moderate-sized town we may say that the pay will range from £400 to £800.

Civilian posts under the Admiralty include those of assistant civil engineers and assistant surveyors in dockyards: they are offered from time to time to open competition, and carry good stipends.

Full information can be obtained by applying to the Civil Service Commissioners.

- (b) *Mining*.—There is the post of Colliery Manager, first as Assistant and afterwards as Chief. The Colliery Manager's Certificate must be secured. At home, many posts are open to well-trained men in our coal and iron mines; a man will probably receive a commencing salary of, say, £150, which will increase according to his skill and worth; abroad, in Australia, India, South Africa, and South America, vast opportunities exist for the man who has knowledge, determination, resource, and character.

Then there is the desirable post of Mines Inspector. A candidate must receive authorisation from the Home Secretary before he can present himself for examination. Such an authorisation can best be obtained from an M.P., who is either a recognised leader of opinion in mining matters, or has influence with those who are. A candidate should be between 23 and 35, should hold a First-class Colliery Manager's Certificate, and be well educated, and a man of good manners and address. Examinations are held at irregular intervals, and it is well to make early application to the Home Secretary. The subjects comprise hand-writing, orthography, arithmetic, composition, theory and practice of coal mining, and a knowledge of metalliferous mining. The examination is not the most important point, and is not very formidable, being in many respects elementary in character. A fee for examination of £6 is required of the candidate.

The salary for Assistant Inspectors is £300 per annum, increasing to about £450, and for Chief Inspectors £600, increasing to about £1,000.

- (c) *Mechanical and Naval*—A good firm will pay a young man from £150 to £200 per annum as a start, and the future will depend entirely upon himself. As manager or chief draughtsman he may be sure that he will receive his market value, and that value will range from some hundreds to, perhaps, thousands.

- (d) *Electrical*.—An electrical draughtsman will receive from £70 to £100 as an assistant, and from £250 to £300 as chief. In "Central Station" work a "switchboard" attendant will have £60 to £80, a "shift" engineer £80 to £150, an assistant engineer £80 to £200, and a chief engineer from £200 to £800 according to the size and importance of the "station."

At Carlisle, *e.g.*, the salary starts at £300 and rises to £400.

In installation work a young engineer in charge of house wiring work will receive about £100 per annum in a small undertaking, and from £200 to £300 in a more important one.

In Marine work the rate of pay of an electrical engineer on a Steamship Company's boat (*e.g.*, the P and O) is about £8 per month, with board and quarters; in the Royal Navy it will be £100 per annum rising to £118, with the chance of becoming chief electrician, with a substantial salary.

Posts in the large electrical firms vary considerably in value, but we may say with confidence that the well-trained man, who can manage men, is sure of a good stipend, and if, after gaining the necessary experience, he has the capital and the opportunity to set up on his own account, energy and alertness and determination will, in most cases, bring a full reward.

Scientific Societies.—The most important of these Societies is the Institution of Civil Engineers, Great George Street, Westminster: a candidate must pass an examination for admission, first for the studentship and then for the associate membership. Admission into this, the most comprehensive of the Engineer Societies, should be the aim of every able and earnest student, but it must be clearly understood that examination requirements are supplementary to other requirements relating to practical training and experience, and, as candidates are not allowed to enter for the examinations unless they fulfil these other requirements, they are advised to apply for direct information to the Secretary, Dr. J. H. T. Tudsbury, Great George Street, Westminster, S.W. The Institution accepts certain examinations—which are set forth in detail in the Regulations—as exempting candidates from their own examinations, and a student who has passed through a College course and has obtained a degree may thus be placed in an advantageous position. The Institution consists of Members (M. Inst. C.E.), Associate Members (Assoc. M. Inst. C. E.), Associates (Assoc. Inst. C.E.), Honorary Members (Hon. M. Inst. C.E.), and Students (Stud. Inst. C.E.).

Other Societies are the Institution of Electrical Engineers, the Institution of Mechanical Engineers, and the Institution of Mining and Metallurgy, which confer upon their members the privilege of adding the respective letters after their names.

Select list of Colleges and Schools, of which fuller information is found in the Appendices :—

Edinburgh University.	Durham School.
University College, London.	Sedbergh School.
King's College, London.	Eastburne College
Armstrong College of Science, Newcastle-upon-Tyne.	Bromsgrove School.
University of Liverpool.	Giggleswick School.
University College of Wales, Aberystwyth.	Trent College.
University College, Reading.	King's School, Canterbury
Glasgow and West of Scot- land Technical College.	King's School, Rochester.
Wigan Technical College.	St. Lawrence College, Ramsgate.
Bradley Court, Mitcheldean.	Christ College, Brecon.
The White House, Barsham.	Plymouth College.
	Monmouth School.
	Dover College.
	Brighton College.
	Dean Close School, Cheltenham.
	Grantham School.
	Kendal Grammar School.
	Leighton Park School.
	Windermere Grammar School.
	Carlisle School.

Future Career Association.

VIII.—THE TEACHING PROFESSION.

i.—Higher Education.

Qualifications.—Those who wish to enter upon the profession of teaching should be assured that they have a real love of the work. They should not be attracted by the idea that the teacher's work is light and his holidays long. A conscientious teacher finds that his work is not over at the close of school. He has to revise some of the work of the day, and ought to prepare himself for the work of the morrow. Long Holidays, again, are not always found to be an unmixed advantage, as a teacher of limited income will soon discover. A young man desiring to become a teacher should have physical strength to endure the wear and tear of the profession, he must possess tact and patience, he must love boys, and he must like teaching. Much learning is useless unless it is combined with common sense and a kindly sympathy with the ways of the British boy, for there is truth in the remark that it is the converted burglar who makes the good policeman.

For the post of assistant in a secondary school a University degree is in most schools essential, and in all schools desirable. Men with high degrees, assuming that they also have skill in teaching, are practically certain of securing good posts, and of

rising in the profession. In the nature of things they can form only a small percentage of the secondary teachers in the country. Among the hundreds of good teachers in secondary schools are men who have taken an ordinary degree at one of the older Universities, graduates of a newer University, and certificated teachers who have qualified themselves as teachers in secondary schools. At the present time, when science forms so prominent a part of secondary education, a science degree is valuable.

It is becoming the general opinion that teachers in secondary schools should undergo some preliminary training. As a matter of common sense, it seems not unreasonable that a secondary school teacher, in his first attempts, should have something more to guide him than his own reminiscences of the Sixth Form. Courses of training can be taken at Oxford and Cambridge, theory and practice being combined; and all the newer Universities pay special attention to this important subject. The College of Preceptors grants teaching diplomas as the result of examinations in the principles and practice of teaching. Particulars of the examinations and of the University courses can be obtained on application. They may be summarised thus:— (1) A course of practical training and satisfactory evidence of ability to teach; (2) success in a written examination in the theory, history, and practice of education; (3) possession of a certificate of power to maintain discipline.

Prospects.—The emoluments of assistant teachers vary with their subjects and with their status in a

school. The salaries of Science Masters, who are now in considerable demand, may vary from £150 to £400. A Classical Master may receive from £100 to £450 a year; while the salary of a Mathematical Master may be from £120 to £400 annually. Modern Language Masters may receive from £100 to £300; Masters who take general subjects from £70 to £200. If a master is resident, his stipend will be less in each of these cases by the cost of residence, which we may roughly calculate as £50 per annum; the assistant masters who receive the higher scale of pay are generally non-resident masters in the Public Schools who are not House Masters. A teacher may receive a slight additional remuneration if he can teach such subjects as shorthand and book-keeping, or can give instruction in manual work, now often left to a local carpenter who cannot maintain discipline. Assistants in secondary schools have occasionally been able to add to their income by assisting in the work of evening classes, as mathematical, science, or modern language teachers.

The prospects, therefore, of assistant masters in secondary schools can hardly be described in glowing terms, but now that Secondary Education is demanding national attention, there will be a decided improvement, without doubt, in the near future. There are, of course, the chances of obtaining Head Masterships, but the proportion of such chances is not greater than one in six. Head Masters are, on the whole, respectably paid. In most schools a minimum salary is fixed, say about £150 a year. Beyond this a Head Master receives a capitation fee, never less than £2 for each scholar in his school.

Then he has a house provided, or he receives a grant equivalent to the rent of a house. Thus, the Head Master of a school of some 100 boys would have a house, and not less than £350 a year. He has, besides, the privilege of taking boarders. In the largest schools, an Assistant Master may become a House Master, and his income, ranging up to £750, is then largely in excess of what a Head Master in a smaller school receives. These prizes of the profession are limited in number; and we therefore find many assistants drifting off into the Church, private school keeping, or commercial life. There are occasional good openings in the Colonies for men with high University degrees. The Universities Extension Schemes provide openings of a desirable kind. Lecturers in history, literature, and science are in considerable demand. Good posts are open to men of exceptional experience as Directors of Education, with salaries ranging from £500 to £800 per annum, and the best posts on the Inspectorate are often filled direct from the ranks of successful Head Masters. In fact, as public interest in education grows, there will be a large field open for men with special knowledge and an aptitude for teaching.

ii.—The Inspectorate.

It should be borne in mind that the ranks of the Inspectorate, Government and Local, are largely recruited from the members of the teaching profession, and some remarks on the Inspectorate as a career will not be out of place here. Actual

experience in teaching has now become an important qualification for the position of an Inspector of Schools, and it is therefore fairly certain that the great majority of our future Inspectors will have begun their career as assistant masters, lecturers, or tutors. Up to the present, Government Inspectors have been divided into three grades—Sub-Inspectors, Junior Inspectors, and Inspectors (H.M.I.). The Sub-Inspectors are employed in the inspection of Elementary Schools only, and have been nearly all taken from the ranks of the teachers in Elementary Schools. Some years ago, the Board of Education created the grade of Junior Inspector, which was designed to be an intermediate class from which the H.M.I.'s might be drawn after a probationary period, and the majority of these Junior Inspectors have been teachers. At the present time it is uncertain whether this grade will continue to exist or whether the Board will revert to the previous practice of appointing directly to the rank of Inspector, or promoting Sub-Inspectors, or both methods. In addition to the Elementary Branch, the Secondary Branch and the Technological Branch (South Kensington) utilise the services of Junior Inspectors and Inspectors. The several Branches of the Board are no longer in the nature of watertight compartments, and a good many transfers are effected from one branch to another, as well as from the Board's Offices to the Inspectorate, and *vice versa*. For Inspectors of Secondary Schools the chief qualifications are a considerable amount of experience and a rather high standard of education in the way of science, classics, or modern languages. For the Technological Branch, a knowledge of science or art is quite

indispensable, as well as some knowledge of applied science or art, and technical work of all descriptions. For the Elementary Branch, the academical qualifications may not necessarily be so high, but a wide range of knowledge is very valuable. Since the system of individual examination and payment by results has given place to inspection and block grants, Inspectors are freed from the immense quantity of elementary examination work that once fell to their share, but there is still a good deal of this work to be done in connection with the Board's examinations of teachers, and the Inspector who is gifted in that particular way can be of great service to the Board. The duties of the present-day Inspector, besides the most important one of being "the eye of the Department," now include those of a collector and compiler of information, an adviser and persuader of teachers, and not least, of the diplomatist: hence he must be a man of the world, of wide sympathy and much tact and discretion.

There are special circumstances about the work of the Inspector which should be taken into account by those who wish to take it up. The work is materially different from that of the ordinary Government office, although holidays and pension arrangements are the same. It involves a good deal of travelling, with occasionally an early start from home and long hours of work. The allowances for travelling are on a liberal scale, but even so, an Inspector must be prepared at times to face discomfort and all the vicissitudes of weather in this uncertain climate: it is therefore obvious that no one who is not in the enjoyment of full bodily health and strength should

undertake the work. Moreover, the work in some districts necessitates sleeping away from home at times, and although this might not trouble the bachelor very much, the family man might find it irksome. There is also the fact that Inspectors under present conditions have to change their abodes from time to time, and of necessity they have to go where the Board requires them, which is not invariably the locality they would select for a desirable place of residence. But against these minor disadvantages must be set the facts that the position is one of influence, the work is never monotonous, there is a great deal of open-air work and travelling, and contact with all sorts and conditions of men and women, and especially children.

Salaries.—Sub-Inspectors of the First Class, £320 to £520 per annum: Second Class, £195 to £345; Junior Inspectors, £200 to £400. Inspectors receive £400—£20—£600, Divisional Inspectors £900 a year, and Chief Inspectors £1,000 a year. Inspectors are occasionally transferred to the Offices of the Board and may fill the highest posts there.

Inspectors are not appointed by examination, but are simply appointed on their merits. Junior Inspectors must be between 23 and 35 years of age, and must have received a liberal education and have knowledge of the Theory and Practice of Teaching. Applications for nomination must be made to the Secretary, Board of Education, Whitehall, upon a form provided for the purpose, and should be accompanied by not more than six testimonials, one of which at least should relate to Knowledge and

Practice of Teaching. There is no examination, except a medical one. Weight is attached to the possession of a University Honours Degree, or some similar distinction, a University Certificate, a Diploma in Teaching, the Board's Elementary Teacher's Certificate, and qualifications in special subjects.

Besides the Government Inspectorate, many Local Education Authorities employ Inspectors for various purposes, and these Inspectors are often promoted to the position of chief educational advisers to the Authority and such like posts. The salaries and prospects of course vary with the locality, so that little can be said as to salaries, but as a rule the salary and prospects would be very much better than those of the average assistant master.

iii.—Elementary Education.

The profession of teacher in an elementary school offers considerable advantages at the present time, and these may reasonably be expected to increase in the near future. For a boy of fair ability and sound constitution, with means not admitting an expensive training, the prospects in elementary teaching are certainly good. The ordinary way of preparing for employment as a teacher in an elementary school has been to become a pupil teacher for two years, and, at the expiration of the term of apprenticeship, to have a training for two years at a Training College. This system is undergoing a change. It is strongly

recommended that those who intend to become pupil teachers should spend three or four years in a secondary school previously. In many places this has been made possible by the establishment of Scholarships from elementary to secondary schools. But, even where there are no such scholarships, the expense is not very great, and it will be found to be money well spent.

Many of the Education Authorities are keenly alive to the importance of training their future pupil teachers in the secondary schools, and have established a system of scholarships to secure it. These scholarships frequently provide, in addition to free education, a grant towards travelling expenses (where incurred), and occasionally a maintenance allowance.

If a secondary school is not easily available for an intending pupil teacher, a pupil teacher centre, with a preparatory class, may take its place. The object is to secure thorough preparation; and the secondary school is probably the best means of doing it. We should advise a boy, who attends a secondary school with a view to becoming a pupil teacher, to study for the Oxford or Cambridge Junior Local Examination. In addition to the training received, and the knowledge acquired, there is this advantage, that success in this examination is equivalent to passing the Government Examination of candidates for admission as pupil teachers.

Candidates, on admission, must as a rule be between 16 and 18 years of age, but, in rural districts, they may be admitted, with the consent of the Board of Education, when only 15 years of age, the term

of apprenticeship being then prolonged to three years instead of the usual two years. Candidates over 17 years of age may, if of exceptional ability, be recognised for one year.

In order to obtain recognition as a pupil teacher the candidate must pass "one of the following examinations:—

1. The Admission Examination, held by the Board of Education.
2. An Admission Examination, conducted by the Local Education Authority, or the Managers of a pupil teacher centre, and approved by the Board.
3. The Oxford or Cambridge Junior Local.
4. The Lower Certificate of the Oxford and Cambridge Schools Examination Board.
5. The Leaving Certificate of the Oxford and Cambridge Schools Examination Board.
6. The Examination of the 2nd Class Certificate of the College of Preceptors.
7. The Junior Certificate Examination of the Central Welsh Board.
8. The Junior Schools Examination of the University of London, under certain conditions.

The subjects of the first mentioned examination are Reading, Recitation, English Grammar and

Composition, History, Geography, and Elementary Mathematics. A detailed syllabus can be obtained from the Board of Education, or from the Local Education Authority.

The parents of boys who desire to become pupil teachers should communicate with the Local Education Authority for elementary education for the area in which employment is desired.

All candidates for recognition as pupil teachers must be approved by the Board; they must be suitable in respect of character, health, and freedom from personal defects.

When the candidate has passed one of the above mentioned examinations, and is of required age, he may become a pupil teacher. As such, he will be required to make not less than 100 attendances (half-days), and not more than 200 attendances per annum in an elementary school, where he will receive training in the art of teaching under skilled superintendence. The remainder of his time will be spent in a pupil teacher centre, where he will follow a course of study leading up to the Preliminary Certificate Examination or some equivalent examination. The pupil teacher may receive some remuneration, the amount varying according to the district.

The Bursar System.—Recently, the Board of Education has instituted a system whereby the intending teacher, instead of becoming apprenticed as a pupil teacher is nominated as a "bursar." He

then continues at the secondary school for a year, during which time he is expected to pass the Preliminary Certificate or some equivalent examination, after which he either proceeds directly to a Training College, or becomes a student-teacher for a year. As a student-teacher he is engaged in actual teaching under qualified 'superintendence' in an elementary school, for which he will obtain a salary varying from £30 to £50 per annum.

Preliminary Certificate Examination.—The Preliminary Certificate Examination is held in two parts at certain recognised centres. Part I, which is held in December, is really a qualifying examination, and lasts two days.

* The selection of a centre is left to the candidate, but application to sit must be made to the Board of Education before September 1st.

The subjects of examination are Reading, Repetition, Penmanship, English Composition, Arithmetic, Drawing, and Music.

Candidates who pass Part I of the Examination proceed to Part II, which is held in the following April. This part consists of (a) three compulsory subjects, viz., English Language and Literature, History, and Geography; and (b) the following optional subjects : — Elementary Mathematics, Elementary Science, Latin, Greek, French, German, Italian, Spanish, Portuguese, Welsh, and Hebrew.

Not less than one and not more than four optional subjects may be taken; moreover, no candidate may

take more than two languages. If two languages are taken one of them must be either Greek, Latin, French, or German.

Further details may be obtained from the Secretary, Board of Education, Whitehall, S.W. A pass in the Preliminary Certificate Examination qualifies for recognition as an uncertificated teacher, and also for admission into a Training College. As, however, the number of those who desire to enter a College vastly exceeds the number of vacant places, those candidates who obtain distinction in some or all of the subjects usually get the preference.

A number of examinations are, under certain conditions, recognised by the Board of Education as equivalent to the Preliminary Certificate Examination; among these are the Oxford, Cambridge, and Durham Senior Locals, and the Matriculation Examination of the London, Manchester, Liverpool, Leeds, Sheffield, Birmingham, and Welsh Universities. Before a candidate is admitted into a Training College, the Medical Officer of the College must certify that his health is satisfactory, and that he is free from bodily defect or deformity; and the candidate must sign a declaration that he intends *bona-fide* to adopt and follow the profession of teacher in some school, pupil teacher centre, or college recognised by the Board of Education.

The period of training is generally two years, though provision is made for a training of one year for those who have already passed the Certificate (not

the Preliminary Certificate) Examination, or certain other examinations recognised by the Board of Education.

The course of study in Training Colleges is directed mainly to the Certificate Examination, which is held at the conclusion of the period of training. In many of the Colleges, notably the Day Training Colleges, however, there are special facilities for preparing for University degrees, and promising students would do well to make use of them.

For this purpose the course of training is extended to three years. Those students who wish to read for a degree are required, before entering College, to pass, under certain conditions, the Matriculation Examination of one of the following Universities:--- London, Birmingham, Manchester, Liverpool, Leeds, Sheffield, Wales or the Cambridge or Oxford Senior Local in subjects corresponding to those required in the Matriculation Examinations, or the Preliminary Certificate Examination with distinction in each of the seven subjects which can be taken in Part II of the Examination.

The cost of the Training College course is not excessive, amounting to from £10 to £15 per annum for tuition, board and lodging. The Day Training Colleges are usually the more expensive, but at certain Colleges, *e.g.*, the Armstrong College, Newcastle-upon-Tyne, scholarships are obtainable, which materially reduce the cost. Some Local Education Authorities, also, award Training College Scholarships to promising students in needy circumstances.

For the man who is anxious to secure an Oxford or Cambridge degree, the facilities offered at these two Universities will be of interest, and we give them in detail:—

Toynbee Hall Scholarships

The Committee of Toynbee Hall offer six or more scholarships of £25 a year, tenable for three years, at Oxford or Cambridge, to pupil teachers, who, at the termination of their engagement, are eligible for admission to Training Colleges

1 The Scholarships are granted in the first instance for one year only. They will be renewed on satisfactory evidence of progress and good conduct. They are only available for those who intend to become teachers in Primary Schools

2 A certificate of birth must be produced. Testimonials are required from the Managers and Head Master of the School in which the pupil teacher has been engaged, and also from two other responsible persons. Originals of these as well as copies should be sent. The birth certificate and original testimonials will be returned.

3 In the February of each year the Committee will hold an examination, at convenient centres, in Classics and Mathematics. An English Essay will also be set.

The examination in Classics will include questions on Latin and Greek accidence, simple passages from Greek and Latin prose writers for translation into English, and a short English passage for translation into Latin.

The examination in mathematics will include questions in *Algebra*, up to and including the "Binomial Theorem" and *Logarithms*. *Euclid*, Books I to IV. *Trigonometry* up to and including solution of triangles.

Elementary knowledge in Classics and Mathematics may be sufficient if further knowledge is shown in one of these subjects.

No special books are set for translation.

No previous examination questions are published.

As it is desirable that successful candidates should be prepared to pass "Responsions" or the "Previous Examination"

as soon as possible after entering the University, they should have begun the study of Greek

Considerable importance is attached to the English Essay

4 In awarding the Scholarships the Committee will consider the results of this examination and the candidate's personal qualifications

5 The authorities of various Colleges at Oxford and Cambridge offer further exhibitions to successful candidates. Particulars as to the courses pursued at Oxford and Cambridge may be obtained from

OSCAR BROWNING, Esq., M.A.,
King's College, Cambridge

G R SCOTT, Esq., M.A.,
2 Clarendon Villas, Oxford

6 Applications are to be made by the 1st of January, on a form to be obtained from

ARTHUR H BAKER, B.A., Hon Sec.,
28 Cautley Avenue,
Clapham Common, S W

Oxford University Day Training College.

At the examination held by the Pupil Teachers' University Scholarship Committee, in February, the following exhibitions (tenable with the Committee's scholarships) are offered for competition among intending members of the above College, being Pupil Teachers —

One Exhibition of £40 a year for three years, offered by Trinity College, Oxford. (For this three candidates will be selected on the general examination, and one of them elected after an interview)

One Exhibition of £25 a year for three years, offered by the Oxford Day Training College

One Exhibition of £20 a year for three years, offered by the Delegacy of Non Collegiate Students.

All the Exhibitioners will be required to pass or obtain exemption from Responsions not later than the September following their election, and to read for a Degree in Honours

Particulars may be obtained from G R Scott, Esq., 2 Clarendon Villas, Oxford.

Cambridge University Day Training College.

Nearly all who come to the College, having been pupil teachers, have previously passed the Preliminary Certificate Examination or its equivalent qualifying them to receive a Government grant of £40 a year, if they are members of a college, or of £25 a year if they are Non-Collegiate Students.

The expenses of a Non-Collegiate Student during the twenty-five weeks of necessary residence are reckoned at £70 a year, exclusive of clothes and travelling expenses. Of this the grant provides £25; another £25 is given to those who are fortunate enough to gain a Toynbee Hall Scholarship; while the remaining £20 must be found by the student himself. The expense of joining a College is higher, but some Colleges have generously offered Exhibitions, which go some way to make up the difference. In particular, Emmanuel College offers an Exhibition of the annual value of £40 for three years, King's College an Exhibition of £30, and Trinity College a Subsizarship of £35.

For further particulars apply Oscar Browning, Esq., King's College, Cambridge.

The future career of the Student largely depends upon his success in the Certificate Examination; in other words, it depends upon his own industry during his period of training.

When a student has completed his training he is in a position to become a recognised certificated teacher in an elementary school. The Board of Education also recognises, as certificated teachers, any graduates or persons qualified by examination to become graduates of any University in the British Empire provided they hold, in addition, a certificate of proficiency in the Theory and Practice of Teaching granted by the Universities of Oxford, Cambridge, London, Durham, Manchester, Edinburgh, or Dublin, or by the College of Preceptors.

A young teacher, coming from a Training College, or just entering upon the work of teaching, is strongly advised to become an assistant in a good town school, rather than take the headship of a small country school. The experience gained thereby will be found invaluable.

Prospects.—At the present time there is a great demand for assistant teachers, and it will be some time before the supply overtakes the demand. The remuneration varies in different localities. We may select London, Birmingham, and Carlisle. In London the commencing salary of an assistant master is, as a rule, £100, rising by annual increments of £5 for two years, then of £7 10s. up to £150. If reported upon satisfactorily he may then receive further increments of £7 10s. per annum until a maximum of £200 is reached. Trained certificated teachers who have taken a University degree commence at £110 per annum. In Birmingham the salary of a Certificated Assistant Master, College Trained, starts at £85 and rises to £150; Non-College Trained, £75, rising to £150; Chief Assistant Masters in Classroom Schools receive £100 and rise to £185. The salary of Headmasters ranges from £190 to £325 per annum.

In Carlisle the scale of payments is as follows:—Certificated Assistants commence at £80 and rise by annual increments of £5 to £135. In the case of College Trained Certificated Teachers the years spent in a Training College count as years of service under the Committee. Uncertificated Assistants commence at £60 and rise by annual increments of £2 10s. to £65 per annum.

As a county scale we may instance the Cumberland arrangement. College trained Certificated Assistants receive £100 to £130, the yearly increment being £3; Certificated Assistants, not College trained, £90 to £110; Uncertificated Assistants, £50 to £60.

Assistant Teachers will be well advised to employ their leisure time in preparing for a University degree, or pursuing some special branch of study—a science, a language, etc.

When a teacher has spent some time as an assistant, and his work has been satisfactory to the authorities, he may reasonably look forward to obtaining the headship of a school. The remuneration may be generally regarded as fairly good. We may instance the London scale. The schools are graded according to the number of scholars, or to the school accommodation:—

Grade 1	200 or under	...	...	£175—£200
„ 2	201 to 300	...	...	£200—£250
„ 3	301 to 400	...	...	£250—£300
„ 4	401 to 600	...	...	£300—£350
„ 5	over 600	...	...	£350—£400

An increase of £5 is allowed in all grades for each year of satisfactory service up to the maximum amounts.

In Carlisle the Head Master of a School with an average attendance of under 200 rises by annual increments of £6 from £138 to £192; of 200 and under 300, from £144 to £204; of 300 and upwards, from £156 to £216.

Table showing the scale of salaries for teachers, for last 3 years not exceeding

				Master,
60	...	...	...	£105 to £130
75	...	...	...	110 to 135
100	...	...	...	115 to 140
150	...	...	...	125 to 160
200	...	...	...	135 to 170
250	...	...	...	145 to 180
300	.	..		160 to 200
over 300	.	.		By special resolution

The above amounts to include £10 in lieu of house. In the case of Council schools with a house provided, £10 to be deducted from the above amounts

In most cases an annual bonus is given to teachers, both head teachers and assistants, who hold the degree of any University in the United Kingdom. There are some valuable chances of promotion to able teachers; for instance, Assistant Inspectorships, Directors of Education, Secretaries of Technical Schools and Organising Secretaries for Education Authorities.

The prospects of teachers in the Army and Navy are fairly good, but every teacher must begin at the bottom.

Candidates who pass the Preliminary Certificate Examination, or one of the equivalent examinations, but who do not proceed to a Training College, are recognised as Uncertificated Teachers, but their remuneration is small, from £50 to £75,

or thereabouts. They must therefore prepare themselves for examination for a certificate, and, when they have passed, their prospects are almost as good as those of the men who have been College trained.

iv.—Private Schools.

Private Schools have an important place in our educational system, and we believe that the best of them will maintain that position. We may classify Private Schools as consisting, first, of the Middle-class School offering a commercial education, generally at a somewhat low fee, at which boys remain until they go out into life; and, secondly, the Preparatory School, at which young boys, from 8 to 14 years of age, are prepared at high fees for entrance into our great Public Schools.

Prospects.—The stipend of an assistant master at a middle-class Private School is generally small, ranging from £50 to £150 per annum, or less if resident. He is frequently a man without a degree, and his future, unless he possesses private means, is not hopeful. As head master, if he has means to buy or start a school, he may secure a fair income, say £250 to £350 per annum.

The Preparatory School is in a different category. The head master is generally himself an old Public School man, with a good Oxford or Cambridge degree, and he has a staff of young graduates who are often fair scholars and good athletes. The fees are high, ranging from £100 to £150 or more per annum, but we must always remember that expenses are also

high and the risks great. A high-class Preparatory School involves a heavy initial outlay—several thousands—and a constant annual expenditure on buildings and equipment to keep it up to date. Its risks are many: an outbreak of infectious illness may spell ruin; the locality, in which the school is placed, may forfeit popular favour, and the school must either, at heavy cost, change its locale or lose its connexion; again, money invested in a Private School is often an unrealisable asset, for the connexion of a Preparatory School depends so much on the personality of the head master that, if he dies suddenly and his successor is unknown to the parents, its value is sadly impaired.

As an assistant master in a good Preparatory School a young graduate will receive a commencing stipend* of £100 with board and lodging, “and men who throw themselves into the work and make themselves useful and efficient can rapidly double their salary.” (See Board of Education Special Reports, Vol. 6). While he is young and hopeful, his life is a delightful one, but his chances of obtaining such a stipend as will enable him to marry are small.

If, as head master, he has the means either to purchase a school, or to start one in an attractive locality, he must be prepared for a heavy outlay. The head masters of a few of the leading Preparatory Schools make princely incomes, but they are the exception, and it is probably true that an income of £500 is a fair average. (See Special Reports, Vol. 6, p. 416.)

IX.—JOURNALISM.

This profession is unlike all others. Admission to it is free, there are no examinations to pass, no fees to pay, no limit of age, influence probably counts for less in it than in any other, and success depends absolutely on the man himself. On the other hand, competition is severe and the profits at all times precarious.

One must be content with small beginnings, either as a contributor to magazines or as a newspaper man. Frequent disappointments may be expected at first; we have all heard—it is a favourite subject with the story writers themselves—of the difficulty of getting work accepted, of sending an article or story to office after office only to receive it back again with the Editor's compliments and regrets. The writer who has reached the ear of the public must exert himself to keep it; he succeeds best who can best discern the drift of the public taste, and, by following it, he may perhaps some day help to lead it.

Needful Qualifications.—What, then, are the qualifications likely to bring success? To begin with, it must be the youth's own choice; if he himself does not declare a strong inclination for it, Journalism is the worst occupation to recommend. But many people think they could easily become successful writers; there is a certain glamour about literature,

a notion that it must be an easy way of making money, and must bring with it a delightful freedom from convention and responsibility. This is largely an illusion; there are several qualifications besides inclination for which we must look in the budding Journalist.

First, as regards knowledge and ability: he should be an "all-round man," rather than very brilliant in any one branch. He will probably have occasion to deal with a large variety of topics, and must be ready, as occasion requires, to turn his hand to almost any subject. The wider his own interests, the more interesting will be his manner of dealing with his subject, whatever it be. Next, as to temperament: he should be of a cheerful and self-reliant disposition. The uncertainty of the profits makes Journalism an unsuitable walk of life for the diffident or over-cautious; such people should seek some other profession, which will bring them an income more certain and more regular.

Thirdly, he should have a pleasant and courteous manner. The Journalist is indeed unseen by his readers, but, to provide them with reading, he must often depend on personal intercourse with others: as reporter, as interviewer, as article writer, he will have to seek information from all kinds of people; and to obtain this he must show the tact and courtesy of a man who is self-restrained without being shy, and energetic without being pushful.

Fourthly, as to character: the great essential is industry. In men who hold a salaried post this is obvious, but it is even more

necessary for the "free lance," who is to make his living by occasional contributions to newspapers, reviews, or magazines. He must be able to set himself a task and fix his own hours of work as strictly as if they were set for him by a master. In the long run he will find this the only road to fortune.

Before seeking an entrance into the profession the aspirant should give up the idea that it is easy to dash off something that will pay, and try to test and train his capacity for writing. There are various ways in which this can be done, *e.g.* :—

(1) Reproduction from good authors. Let him read an article or speech carefully, and, having mastered the thoughts of the writer, try to put them down for himself. Then let him compare his paraphrase with the original, and he will learn his own weak points. He will probably find from the comparison that he is apt to repeat himself, that his meaning is not always clear, that his sentences are involved or too long, his adjectives too many, his style too grandiose, or worse still, too crude a mixture of the stately and the conversational; in short, all the faults usual in beginners.

(2) Précis-writing. This is a useful exercise: abstract the main points of an article, and compress the whole meaning into the fewest possible words; then see by comparison how much of it has been left out, and how serious have been the omissions.

(3) Essay-writing. In doing this the main thing is to remember Matthew Arnold's concise yet pregnant saying: "Have something to say, and say

it as clearly as you can; that is the only secret of style." Of course it will be necessary to avoid the faults mentioned above. We shall then learn that it is one thing to write a grammatical sentence, another to write an interesting one; one thing to write a series of interesting sentences, and another to compose a coherent paragraph; one thing to have an idea, another to convey it to others with effect. We should endeavour to put down our ideas as we should ourselves naturally express them, and avoid imitating another's style. Only thus may the young Journalist hope to develop unconsciously a style of his own.

How to become a Journalist.—There are two ways of entering the Journalistic profession, the regular course of the salaried newspaper reporter, working his way from a Provincial Weekly to the London or large Provincial Daily; and the "free lance" method, which is the best for a man of ability who can afford to wait for promotion. The latter begins by offering articles or stories to editors, and, when he gets them accepted, he may become more closely connected with the staff as occasional contributor, then still more closely as regular contributor, and may even enter the editorial ranks.

First way—as Reporter.—It is easiest and in some ways best to begin by seeking a post on the staff of a small Provincial Paper. The London Papers and large Provincial Dailies are not as a rule disposed to employ an absolute beginner, nor to take trouble to help or teach the inexperienced. Again, the work for these smaller papers is more varied, there being less division of labour among the

staff than in the larger offices. In consequence, the young reporter will have to try his hand at almost every branch of newspaper work; paragraphs, local gossip, reports of meetings, entertainments, speeches, &c. This gives him an excellent chance of finding the line for which he is best adapted, which he can use to his advantage, if he afterwards proceeds to a more important paper. Of course proficiency in shorthand and a sound general education are quite indispensable. To attain the former, he must practise it daily for a considerable time; if he learns the subject at school and has exercises to write in it, he should supplement them by constant practice on his own account.

It is an advantage to have an introduction to a local editor, but there is nothing to prevent the aspirant introducing himself or answering the advertisements which are often inserted in the papers, *e.g.*, the "Daily Telegraph," "Daily News," and others. The application should be short and to the point, stating the qualifications possessed, proficiency in shorthand, general education, &c., without unnecessary amplification or too many references.

Emoluments.—At first the salary will be small, probably less than a guinea a week; but the appointment must be regarded as practically an apprenticeship. In the larger papers a beginner may obtain three or four guineas a week, and, if he develop distinct ability in any particular line, he may rise from that to four or five hundred a year. The second or news-editor of one of the larger papers may receive little less than a thousand a year, and the editor from one to two thousand.

Second way—the “Free Lance” Method.—Having determined on entering the lists as a “free lance,” the beginner should be careful in his choice of a periodical, study it to see the type of articles it publishes, and try to make his own efforts run on similar lines. This may save many of the disappointments before alluded to.

Emoluments.—He will not expect to make much at first, but his pay will depend on the merit of his work, and need not be the less for his not becoming known. The rates of pay vary: for magazine articles with illustrations ten guineas is a usual sum in the best popular monthlies, five in others; but twenty guineas or more may be offered. For contributions to newspapers usually one guinea for a thousand words is paid, but, if the work is one involving special research or knowledge, twice that sum is often given. If he has the capacity, and takes the requisite pains, the beginner may reasonably expect to make £100 in his first year, and, as he becomes known and more experienced, may soon make twice or three times as much. There will be successes and disappointments, good years and bad, as he goes on, and it is only the most fortunate who are likely to reckon their incomes in thousands. But for a capable writer, an average of £500 a year is not unusual.

If he has sufficient means, he cannot prepare himself better than by a University course. A good degree in Classics, Law, or History will not in itself weigh much with an editor, but the man who can obtain one is likely to make a success in Journalism,

if his tastes lie in that direction. Moreover, life at the University will bring him into contact with men of many kinds; he will learn to understand the difference between various schools of thought, and will thus develop the faculties of observation and sound judgment.

It may be further stated that many of the higher posts on the greater dailies and the great periodicals are held by University men who have worked their way in from the ranks of the occasional contributors.

For list of Schools consult Appendix IV.

X.—CHEMISTS.

I—Pharmaceutical Chemists.

Qualifications.—General education should have careful attention, and a sound foundation should be laid in the elements of natural science. In this case, as in so many other cases, it is advisable to pass the Oxford or Cambridge Local Examination while a boy is at school. He should then connect himself with the Pharmaceutical Society of Great Britain. He may obtain registration as an “apprentice or student” by submitting to the Registrar of the Society a certificate of having passed an approved examination, provided the certificate includes, in the subjects for which it is granted, English Grammar, Latin, one Modern Foreign Language, Arithmetic, Algebra, and Euclid. A pass in these subjects must be obtained in not more than two examinations conducted by the same examining body.

Approved Examinations:—

1. Oxford Senior or Junior Locals, Responsions.
2. Cambridge Senior or Junior Locals, Higher Local Examinations, Previous Examination.
3. Durham Senior or Junior Locals.
4. London Matriculation.

5. Victoria University : Preliminary Examination.
6. University of Birmingham : Matriculation.
7. • Edinburgh University or Aberdeen University : Junior or Senior Locals, Preliminary Examination for graduation in Medicine or Surgery or in Arts or Science.
8. • Glasgow University or St. Andrew's University : Preliminary Examination for graduation in Medicine or Surgery or in Arts or Science.
9. Public Entrance Examination of University of Dublin.
10. Matriculation Examination of Royal University of Ireland.
11. Matriculation Examination of University of Wales.
12. Scotch Education Department : The Honours and First Grade and Lower Grade Leaving Certificates.
13. Senior, Middle, and Junior Certificates of the Intermediate Education Board for Ireland.
14. • Central Welsh Board : Honours, Senior and Junior Certificates Examination.
15. Preliminary Medical Examination of the Educational Institute of Scotland.
16. Higher or Lower Certificate of the Oxford and Cambridge Schools' Examination Board.
17. College of Preceptors : 1st or 2nd Class Certificate.

Certificates of having passed an examination of any other legally constituted examining body may be submitted to the Council of the Society, and each

case will be considered on its merits. The registration fee is two guineas, and must be sent with a certificate.

The usual course for a youth intended for the career of chemist and druggist is to enter a shop as an apprentice. He may, of course, enter a training institution; but it is considered better that he should become an apprentice in a good shop, where he can gain an acquaintance with the details of the business of chemist and druggist, and have the chance of acquiring business habits. The term of apprenticeship is generally four years. As a rule no premium is required, except in cases where the apprentice boards in his master's house. On the other hand, the wages are merely nominal. A parent has, therefore, practically to meet the expense of maintaining and clothing his son for four years, and the charges connected with his continued scientific training. The boy's future career virtually depends upon the use he makes of the period of his apprenticeship.

The next examination is known as the Minor, which qualifies for registration as Chemist and Druggist under the Pharmacy Act of 1868. The fee is ten guineas. A candidate must be 21 years of age, and must have been registered as an "apprentice or student." He must produce a Registrar's certificate of birth, and a certified declaration that for three years he has been registered and employed as an apprentice or student, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions. The Council of the Pharmaceutical Society recommend that candidates,

before presenting themselves for examination, should receive a systematic course of instruction occupying a period of not less than six months, and including:—

- (a) At least 60 lectures in Chemistry.
- (b) 18 hours' work in each week in Practical Chemistry.
- (c) 45 lectures in Botany.
- (d) 25 lectures and demonstrations in Materia Medica.

This can be done generally in the Science Schools existing in almost all fair-sized towns. It points to the necessity of apprentices having time for regular study, and availing themselves of the means of extending their scientific knowledge. The subjects of the Minor or Qualifying Examination are Botany, Chemistry and Physics, Materia Medica, Pharmacy, Practical Pharmacy and Dispensing, and Prescriptions. The Examination is taken in two parts, the first portion being devoted to practical work in Chemistry and in Pharmacy. Those who do badly in the practical test are informed that they cannot satisfy the Examiners. Very full details may be obtained, on application, from the Registrar of the Society, 17 Bloomsbury Square, London, W.C.

There is a further examination, the Major, which qualifies for registration as Pharmaceutical Chemists, who are exempt in England and Wales from service on all juries and inquests. The examination fee is three guineas. The subjects are in addition to, and in advance of, those required for the Minor Examination.

It may be added that persons who have failed to pass an examination, or have failed to attend an examination at the time appointed, can re-enter for examination at a reduced rate of fees. There are some valuable scholarships, entitling the winners to a period of free education in the Pharmaceutical Society's School.

Prospects.—The prospects of a young man as a Pharmaceutical Chemist are fairly good. He will enter the shop of a chemist and druggist as assistant. In a small town his duties will not be heavy; but in larger places, where the making up of doctors' prescriptions will probably be one of his duties, he may have to work late at night and take his turn at Sunday duty. Assistants in wholesale houses get fairly liberal pay. Some of the abler young Pharmaceutical Chemists, who have distinguished themselves in their examinations, are employed as assistant demonstrators in the Society's School, and have an honourable career before them. The post of dispenser at one of the large hospitals may be considered a prize of the profession. It is worth from £250 to £350 a year. A young chemist should not start business on his own account without being possessed of sufficient capital. With this condition success is almost assured to a capable and courteous man.

ii—Analytical Chemists.

The application of Chemistry to the various processes of manufacture has opened up a great field for the energies of the highly-trained Chemist. A

lad, who intends to become an Analytical Chemist, should be educated at a school which possesses well-equipped laboratories for Practical Chemistry, and where there is a strong staff of science teachers. After remaining at a good school of this type until he is about 18 or ~~19~~, he should proceed to one of the Universities, Colleges, or Institutions recognised for the training of candidates for the Examinations of the Institute of Chemistry.

These include the Universities of Oxford and Cambridge, Leeds, Liverpool, Manchester, Sheffield, Birmingham, Edinburgh, Glasgow, Dundee, St. Andrew's, Dublin; the Armstrong College, Newcastle-upon-Tyne; King's College, University College, and the Royal College of Science, London; University College, Bristol; University College, Nottingham; University College Aberystwyth; etc. He should there make himself practically familiar with the principles of Theoretical Chemistry and with the principles and practice of Qualitative and Quantitative Analysis, so as to enable him to conduct original investigation, and apply the same to manufacturing or other purposes. He should also apply himself to the study of Physics, Mathematics, together with Metallurgy, or Geology and Mineralogy, or Agriculture.

Should the student wish to specialise in any particular branch of Chemistry, he should take care to select an Institution which affords special opportunities for such work. Thus for Chemistry as applied to dyeing, he might select Leeds University; for Metallurgy, the Armstrong College, Newcastle,

the Wigan Technical College, or the Royal College of Science and Royal School of Mines, and so on.

An arrangement has been made at the Heriot-Watt College, Edinburgh, for giving a complete theoretical and practical training to Chemistry students who wish to become brewers. Messrs. Campbell, Hope, & King, Ltd., whose premises adjoin the College, have made an agreement by which they will permit their apprentices to combine their apprenticeship in the Brewery with their course of instruction in the Heriot-Watt College. The apprentices will be allowed to study at the College during the winter, and at the same time they will work in the Brewery in the early morning before coming to their classes, while they will also spend two successive summers in the Brewery. Messrs. Campbell, Hope, & King charge a premium of £100 for apprentices who wish to take advantage of this arrangement. Students will thus be able to get a thorough scientific and practical training.

For the student who wishes to become a Technical Chemist, but who has not yet decided what branch of Chemistry he will ultimately take up, the Heriot-Watt College, Edinburgh, have made an arrangement with the Edinburgh and Leith Corporations Gas Commissioners, by which students will be allowed to spend four or five months at the end of their second winter session, and a whole year at the end of their third winter session in the laboratories of the Gas Works at Granton, free of charge. Here they will study the Analysis of Fuels, Gases and Coal Distillation Bye-Products, subjects which enter into so many of our modern chemical manufactures, and they will

also get a broad, practical training in the processes of Technical Chemistry, in addition to the theoretical training at the College.

The Institute of Chemistry of Great Britain and Ireland, 30 Bloomsbury Square, London, W.C., exists to promote the better education of persons desirous of becoming public and technical analysts and chemical advisers on scientific subjects; to examine candidates; and to elevate professional Chemistry by setting up a high standard of proficiency, and by insisting on the observance of strict rules for professional conduct. The first grade is the studentship. Every candidate for admission to a studentship is required to produce evidence that he is upwards of 17 years of age, and has passed a Preliminary Examination in subjects of general education, approved by the Council of the Institute. He must also show that he is working with the object of qualifying himself for the profession of analytical and consulting Chemistry. The subjects in which a candidate must have passed, are:—

- (a) English Language; (b) Mathematics, comprising Arithmetic, Algebra to Simple Equations, inclusive; Geometry, including the first three books of Euclid, or its equivalent; (c), at least one of the following:—French, German, Italian, Spanish, any other modern language approved by the Council; Greek or Latin.

And, if not more than one language be taken under (c), the candidate must also pass in (d) Higher Mathematics, or any other subject prescribed in the regulations for a Preliminary Examination approved by the Council.

The candidate must produce satisfactory evidence that he has passed in the compulsory subjects in not more than two examinations

The fee for registration as a student is 5s, and he is required to pay the same ~~amount~~ t annually, on January 1st

All students are required to present themselves for examination by the Institute within 5 years of the date of their admission as students

To become an Associate of the Institute, three examinations must be passed, a Preliminary, the Intermediate, and the Final. The Institute does not conduct a Preliminary Examination, but requires evidence of success in an approved Preliminary Examination in the above-mentioned subjects, and testimonies of regular attendance at systematic day courses of scientific instruction in Chemistry, Physics, Mathematics, and one other scientific subject, in an Institute recognised by the Council, during at least three academic years. As an alternative to three years' training in an Institute, a candidate may take two years' such training, and work systematically for two other years under the direction of a Fellow of the Institute in a laboratory approved by the Council. Having satisfied these tests, the candidate is eligible for admission to the Intermediate Examination of the Institute. The same privilege is allowed to any one who has taken a degree in science in any University recognised by the Council, provided that inorganic and organic Chemistry and Physics were taken as subjects in the Degree, and that

Mathematics were taken in either the Degree or the Intermediate University Examination. The examination extends over at least four days, and its subject⁹ is Theoretical and Practical Chemistry. Success in the Final Examination for the degree of B.Sc. at various ~~Universities~~, under certain conditions, exempts from the Intermediate Examination. The next examination qualifying for an Associateship is the Final. It lasts at least four days; and a candidate is expected to possess, in addition to a general knowledge of all branches of Chemistry, a thorough knowledge of one branch, selected by himself from (a) Mineral Chemistry; (b) Metallurgic Chemistry; (c) Physical Chemistry; (d) Organic Chemistry; (e) Analysis of Food and of Drugs and of Water; (f) Biological Chemistry. On and after January 1st, 1910, candidates for the Final Examination will be required to translate—with the aid of dictionaries—French and German technical literature into English, to the satisfaction of the Examiners. A candidate who intends to qualify himself for appointment as Public Analyst is recommended to select branch (e)

For admission to the Fellowship of the Institute, an Associate is required to have been registered three years, and to have been continuously engaged during that period in the study and practical work of applied chemistry in a manner satisfactory to the Council. All necessary particulars with regard to the above examinations may be obtained from the Registrar, Institute of Chemistry, 30 Bloomsbury Square, London, W.C.

Qualifications.—No lad should endeavour to become an Analytical Chemist unless he has real taste for practical Chemistry, has some Mathematical power, and is a neat and skilful manipulator; the career needs special gifts and elaborate training. A student, after a training at one of the Institutions mentioned above, should take his B.Sc., and become an Associate of the Institute of Chemistry.

Cost of Training.—If, on leaving school, he goes to Oxford or Cambridge, he will need £140 to £180 per annum for three or four years. If he goes to one of the other Colleges or Institutes, which we have mentioned, he will need about £90 per annum for three years. A smart student may reduce this cost considerably by obtaining one or more of the numerous science scholarships that are offered by most Universities and Colleges. Royal Exhibitions of the value of £120 per annum, and tenable for two or three years, are awarded by the Government to able students on the recommendation of certain Universities and Colleges, for the purpose of encouraging research work in Chemistry and other scientific subjects.

These Exhibitions enable some of the ablest men to spend a further period in the laboratories of eminent chemists in Germany or France.

Prospects.—There are openings for really skilled men in many directions, and these openings are increasing in number and in value. There are well-paid posts as Borough and County Analysts. The application of the knowledge of chemistry to all

processes connected with metals, with dyeing, with tanning, with brewing, &c., &c., call for the highest skill. In manufacturing firms an Analytical Chemist will be paid about £150 to start with; this stipend will increase according to his value to the firm, and may easily reach ~~the~~ splendid figure of £1,500.

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Select list of Colleges and Schools as under
 "Physicians and Surgeons" (p 108).

XI.—BANKING.

There is at present hardly ~~any~~ more popular career for a boy than banking, and it is one well worthy of the consideration of parents. The reasons for this popularity are obvious. The work is considered respectable and is by no means difficult, and the hours are comparatively short. No premium is required, and there is not necessarily an entrance examination, though many banks, notably the Bank of England, hold a competitive examination. The young clerk receives payment from the moment he begins work. As private banks are now generally merged into large banking companies, the area of promotion is very much extended, and there are good chances for young men of ability, sterling integrity, and application.

Qualifications desirable.—If a boy is intended for a banking career, he should pay special attention at school to arithmetic and handwriting. He would do well to pass the Oxford or Cambridge Junior Local Examination, taking as two of his subjects French or German, and book-keeping. A commercial certificate of an institution like the London Chamber of Commerce is found to be a good recommendation. *Ceteris paribus*, a boy who has such credentials has superior chances of success.

How to proceed.—The first step to take towards entering a Bank is to obtain an application form from

the manager. This must be carefully filled up and returned, together with such certificates as the applicant possesses. If possible, the recommendation of some person well known in the district in which the Bank is situated should be secured. The Bank authorities must be assured of the ability, good character, and personal respectability of applicants for admission as clerks.

Recommendations worth attention.—When a boy has secured a position in a Bank, he should not be content to look forward to remaining a clerk and nothing more, as is the case with too many Bank clerks. He will find it very much to his advantage in after years to become a member of the Institute of Bankers, which affords facilities for the reading, discussion, and publication of approved papers by members and others, and arranges for lectures on Banking, Mercantile Law, Political Economy, and other kindred subjects. Membership is obtained by election. The Institute holds two examinations, the preliminary and the final. The fee for each examination is five shillings. The examinations are held in April, in London and such provincial centres as are convenient to candidates. The subjects of the preliminary examination are as follows:—

Compulsory—

1. Commercial Arithmetic · Vulgar and Decimal Fractions, Involution and Evolution, Proportion, Percentages, Interest—Simple and Compound, Annuities, Discount, Commission and Brokerage, Profit and Loss, Stocks, Exchanges, Metric Tables.
- 2. Book-keeping : Definition and general principles.

3. Commercial Law : Questions on the Bills of Exchange Act, 1882, and those portions of the Stamp Act that relate to Bills, Notes, and Cheques.
4. Political Economy : Its nature and scope ; analysis and definition of its leading notions, utility, value, wealth, and exchange ; the creation of wealth ; theory of value ; economic rent, interest, profit, wages, and the distribution of wealth generally ; mechanism of exchange, functions of money ; credit ; principles of currency, banking, its history, economic principles and relations to commerce ; the money market, Bank of England, Clearing House, International trade ; foreign exchanges.
5. Practical Banking : Elementary questions on the nature and functions of banking, principal features distinguishing the various classes of Banks, definitions of banking and mercantile terms, banking operations.

Non-compulsory—

1. French : Translation from French into English of a set work ("Recits et Nouvelles"—Edmond About), and of simple passages and letters, questions in grammar, elementary questions on the French decimal system.
2. German : Translation from German into English of a set work (Waldnovellen, by Baumbach), of parts of Preisinger's "German Commercial Reader," and of some easy passage of German ; questions in grammar, German handwriting being used ; translation into German of easy sentences.

NOTE.—French and German cannot both be taken in the same year.

A candidate who fails to pass in any of the compulsory subjects may sit again for the subjects in which he has failed; and he may take the final examination in the subjects in which he has been successful in the preliminary, even though he may not have completed the latter examination. However, neither French nor German can be taken in the final examination unless the candidate has passed the preliminary examination in the language, and also in the five compulsory subjects.

Candidates who have passed the examinations, in Practical Banking, Political Economy, and Commercial Law, held by the Victoria University, Manchester, are excused the preliminary examination in those subjects.

The subjects of the final examination are the same as in the preliminary, but of a much more advanced character, with the addition of English Composition and Banking Correspondence. Honour Certificates are awarded in the final examination in the following subjects:—Political Economy, Practical Banking, Commercial Law, English Composition and Banking Correspondence. As soon as this examination is passed, the candidate may be elected an Associate of the Institute of Bankers. Particulars may be obtained from the Secretary of the Institute 34 Clement's Lane, London, E.C.

Prospects.—A young man who has gained the certificates of the Institute, and has approved himself by his industry and complete trustworthiness, has a very good prospect open to him. At the age of 21

years he is in receipt of probably £70 or £80 a year. In a few more years he may be appointed to the management of a small branch of the local business, and have the assistance of a junior clerk. Promotion is certain in the course of years. As we have said, the area of promotion is now more extended. There is hardly any pleasanter occupation than that of manager of an important branch of a banking company. The salary is good—from £250 to £800, often, at head offices, much more, with, in many cases, a residence. The post of Inspector carries a liberal payment. Many banking companies place restrictions upon their clerks marrying; in some cases, clerks are not permitted to marry before they are in receipt of £130 a year.

For select list of Schools and Tutors consult Appendices IV and V (Mr. Hampson's Classes).

XII.—CHARTERED ACCOUNTANTS AND ACTUARIES.

I.—Chartered Accountants.

The profession of Chartered Accountant is one that offers excellent prospects, and can be entered at a comparatively small cost. If articles are entered into with a member of the Institute of Chartered Accountants, they are stamped with a two-and-sixpenny stamp, and registered at the Institute. There will be a premium to pay, varying with the standing of the firm to which a youth is articulated. No person can be articulated under 16 years of age, and the term of service is five years, except in the case of graduates of a University, who are required to serve three years only.

Necessary Examinations.—Before the articles can be taken up, it is necessary to pass the preliminary examination of the Institute of Chartered Accountants, unless exemption is allowed.

The following conditions should be observed:—

1. No Articled Clerk shall, during his term of service, engage in any other business or occupation.
2. He cannot enter into partnership or go into business as an Accountant during his term of service. His doing so would at once terminate his articles.

The Preliminary Examination is held in the months of June and December, in London, and at some of the following towns:—Birmingham, Bristol, Liverpool, Manchester, Newcastle-upon-Tyne, and Sheffield. Candidates are informed, a week before the examination, in what provincial towns the examination will be held. Exemption from the Preliminary examination is allowed to graduates of any University in the United Kingdom, or to those who have passed one of the following examinations:—

1. The Responsions Examination at Oxford.
2. The Previous Examination at Cambridge.
3. The Examination in Arts for the second year in the University of Durham.
4. The Matriculation Examination of the University of Dublin or the University of London.
5. The Preliminary Examination of the Victoria University, Manchester (including the Universities of Liverpool, Leeds, and Sheffield).
6. The Moderations Examination of St. David's College, Lampeter.
7. The Examination for 1st Class Certificate of the College of Preceptors.
8. The Oxford or Cambridge Senior Local Examination.
9. The Examinations for Commercial Certificates of the Victoria University, Manchester, or the London Chamber of Commerce (Higher Examination).
10. The Examination by the Civil Service Commissioners for 1st Class Clerkships in the Home Civil Service and for the Indian Civil Service; and the further

Examination for admission into the Royal Military Colleges at Sandhurst and Woolwich

11. **The Senior and Honours Examination of the Central Welsh Board.**
12. **The Senior Local Examination of the University of Durham.**
13. **The Matriculation Examination of the University of Birmingham.**

In the case of the examinations referred to in 7, 8, 9, 11, 12, 13, candidates must pass in the subjects of the Preliminary Examination of the Institute; except that an additional optional subject may be substituted for Elementary Latin. Such candidates who thus seek exemption, but who have not been examined in Dictation, English Composition, or Geography, may, in some cases, be examined in such subjects by these Exempting bodies on giving due notice. The subjects of the Preliminary Examination of the Institute are as follows.—

- 1. Compulsory** — *Writing from Dictation, *English Composition, *Arithmetic, *Algebra to Quadratic Equations (inclusive), *the first four books of Euclid, or its equivalent, Geography of British Islands and the Atlantic Ocean and its islands, English History from B.C. 55 to the present time, Elementary Latin.

Special consideration is given to the subjects marked *.

- 2. Optional.**—Two subjects (one of which, at least, must be a language) may be selected from the following.—

Latin · Selected Books
 Greek · Selected Books.

French	}	The Examination consists of the translation of easy passages from these languages into English, and from English into these languages, and questions in Grammar.
German		
Italian		
Spanish		

Higher Mathematics: Algebra, Trigonometry, first six books of Euclid, or its equivalent.

Physics: Elementary Mechanics, Hydrostatics, and Pneumatics.

Chemistry: The principal elements and their more important inorganic compounds.

Animal Physiology.

Electricity and Magnetism.

Light and Heat.

Geology.

Shorthand: The examination consists of dictation at seventy words a minute, and transcription by the candidates of their notes. Any recognised system is accepted.

Forms of application must be returned to the offices of the Institute, Moorgate Place, E.C., accompanied by the examination fee of two guineas, not later than thirty days before the date of the Examination.

Intermediate and Final.—As soon as an articled clerk has served two years and a half (in the case of graduates, one year and a half) he may take his Intermediate examination. It is held in London in May, and the subjects are strictly professional. At the conclusion of his term

of service, he may sit for his Final examination. It is held in London towards the end of May, and the subjects are entirely professional.

The fee for each of the three examinations is two guineas.

The fee on admission as an Associate is 10 guineas, and a similar amount is payable on admission as a Fellow.

The Society of Accountants and Auditors also hold examinations in June and December. The centres are London, Manchester, and Glasgow. There are three examinations, the preliminary, the intermediate, and the final; and the fees are a guinea, a guinea and a half, and two guineas respectively. The preliminary examination is intended to test the general education of candidates, and includes the following subjects:—

Arithmetic.

Dictation.

English Grammar and Composition.

English History (any period). Geography of the World.

Two of the following languages:—French, German, Elementary Latin.

Algebra, including Equations and Fractions.

Euclid, 1st book.

To obtain exemption from this examination, a candidate must have passed an equivalent examination, by an approved examining body, in all the above subjects. Service under articles for two years is a

required condition precedent to the Intermediate examination of this Society. It is held in the month of June, and its subjects are professional. The Final examination is also held in June, and includes professional subjects of a more advanced character. This Society offers special facilities for clerks, who for any reason have not served Articles, to become members, and a scheme has been devised to meet the various contingencies so arising.

Details may be obtained from the Secretary, 4 King Street, Cheapside, London, E.C.

The procedure in Scotland is somewhat similar, examinations being held by the Edinburgh, Glasgow and Aberdeen Societies.

The Preliminary is held twice a year—in June and December. It must be passed before commencing articles, or within six months from the date of commencement. The subjects of the Preliminary Examination are (1) Dictation, (2) English Grammar and Composition, (3) Arithmetic, (4) Algebra to Simple Equations (inclusive), (5) Latin, French, or German, together with any two of the following:—(a) British History—the Stuart period and the reign of Victoria, (b) Geography of the World—with special reference to Europe and the British Empire, (c) Euclid (Book I), and (d) Shorthand.

Candidates who have passed the Degree Examination of any University in the United Kingdom, or who hold the Leaving or Intermediate Certificate of the Scotch Education Department, or who have passed the Junior or Senior Local Examinations of

any University, or the Preliminary Examination in Arts and Science at any of the Scotch Universities, are entitled to exemption from the Preliminary Examination provided that their certificate includes English, Mathematics, and either Latin, French, or German.

The Intermediate examination must be passed at some time during the last three years of service, and may be taken after not less than one year has been served.

The subjects are Arithmetic (including Interest and Discount), Algebra (including Progressions, Annuities, and Logarithms), Book-keeping, Accounts, and Correspondence and Précis Writing.

The Final examination is open to those who have completed their Articles and have attended certain Law Classes at one of the Universities or such extramural classes as may be prescribed.

The subjects of examination are strictly professional.

The Prospects in the profession of an Accountant are highly favourable. Accountants are in request as Secretaries to Building Societies, Savings Banks, &c., and almost all large business firms now employ professional auditors, at a liberal rate of remuneration. As some indication of the scale of fees received for professional work, we may quote the fees assigned to accountants under the Bankruptcy Acts. For preparing balance sheets, investigating accounts, &c., principal's time, exclusively so employed, per day of seven hours, including necessary affidavit, £1 1s. to £5 5s.; chief clerk's time, 10s. 6d. to £1 11s. 6d.;

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any University, or the Preliminary Examination in Arts and Science at any of the Scotch Universities, are entitled to exemption from the Preliminary Examination provided that their certificate includes English, Mathematics, and either Latin, French, or German.

The Intermediate examination must be passed at some time during the last three years of service, and may be taken after not less than one year has been served.

The subjects are Arithmetic (including Interest and Discount), Algebra (including Progressions, Annuities, and Logarithms), Book-keeping, Accounts, and Correspondence and Précis Writing.

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other clerks' time, for a day of seven hours, 7s. 6d. to 16s. An Accountant and Auditor with a fair amount of business is certain of a comfortable income; those who are in the front rank of the profession earn very large incomes and employ large staffs. Their chief clerks may receive from £200 a year upwards; the junior clerks in proportion. In some offices, clerks are paid according to the amount of work they do, and an industrious clerk can make a very fair income.

For select list of Schools and Tutors consult Appendices IV and V (Mr. Hampson's Classes).

ii.—Actuaries.

An Actuary is defined in the Oxford English Dictionary as "An official in an insurance office, whose duty it is to compile statistical tables of mortality, and estimate therefrom the necessary rates of premium, &c.; or, one whose profession it is to solve for Insurance Companies or the public all monetary questions that involve a consideration of the separate or combined effect of Interest and Probability, in connection with the duration of human life, the average proportion of losses due to fire or other accidents, &c." It is evident that work of such a kind demands skill and accuracy in the manipulation of figures. A youth, therefore, who wishes to become an Actuary should pay special attention to Arithmetic, more especially to percentages, simple and compound interest, present

worth and discount, and stocks; and he should give close attention to Algebra. It would be advisable that he should pass the Oxford or Cambridge Local examination, as some evidence of a sound general education. Too much stress cannot be laid upon the cultivation of distinct and rapid handwriting. It is most important, and should have special care given to it. The advantage of this profession is that no capital is required, nor is the prospective Actuary required to serve articles. The whole cost of professional education, fees, etc., is extremely low, probably not exceeding £30. The youth should obtain a post in the head office of some Insurance Company, and then join the Institute of Actuaries, which holds lectures in preparation for the first examination, the course extending from October to April. The examination is held annually in April, one month's notice being given of the dates and places of the examinations. The first examination is of candidates for admission to the class of Student of the Institute. There is a fee of a guinea for entrance, and another guinea for the examination. The subjects are:—

1. Arithmetic and Algebra.
2. The theory and use of Logarithms.
3. The elements of the theory of Probabilities.
4. The elements of the Calculus of Finite Differences, including Interpolation and Summation.

A candidate, passing this examination and paying a subscription of £1 1s. for the current year, is admitted as a Student of the Institute. Graduates in mathematical honours of any University in the

United Kingdom are exempt from this examination. There is a subsequent examination for Associates and two others for Fellows of the Institute; but the details given above are sufficient to show in what direction a youth, intended for the profession of Actuary, should turn his studies. The Council of the Institute have established a class of Probationers, who are allowed some of the privileges of the members. The entrance fee is half-a-guinea, and there is an annual subscription of the same amount, payable on admission, and on the 1st of October each year. Probationers can join the classes for students and attend the ordinary general meetings of the Institute, but they can take no part in the discussions or the voting.

In Scotland admission as a student of the Faculty of Actuaries may be obtained on the recommendation of two Fellows of the Faculty. Within three years of admission the student is expected to present himself for the first examination, which is held annually in April.

The subjects of examination include Arithmetic; Algebra—Equations, Series, Permutations and Combinations, Binomial Theorem, Logarithms; the Elements of the Calculus of Finite Differences and the Theory of Probabilities.

Thereafter there are two further examinations in professional subjects, which should be taken at intervals of not more than three years.

Graduates of any University of the United Kingdom may be exempted from the first examination

if they have taken Mathematics as one of their special subjects in which they have graduated.

Further particulars may be obtained from the Secretary, 24 George Street, Edinburgh.

Prospects.—To get an introduction into a good Insurance Office usually requires some personal recommendation or influence. A candidate will probably have to go before the manager, who will be able to learn more of his capabilities and fitness from a few minutes' conversation than from much correspondence. The most important recommendations for a post in a good Insurance Company are a thoroughly good general education, nice manners and appearance, intelligence, and smartness. If a youth is admitted, he serves an apprenticeship of five years, and receives during that time from £80 to £150. These five years should be invaluable to him. He can make himself familiar with all the details of insurance business, and his future depends wholly on his own industry and perseverance. When his term of five years is completed, he may become a clerk. He will begin at £60 or £70 a year, and rise to £250 or £300. If promoted to an Inspectorship, he may receive £250 or £300 a year and commission. A reputation for exceptional ability in calculation and mathematics may bring him to the post of Actuary, which will be worth from £500 to £700 or £800 a year. These well-paid posts may be regarded as the prizes of the profession, but they are attainable by an official who has begun as an ordinary clerk, and has worked his way up by industry, energy, and good business ability. Probably the best paid

branch of insurance business is Fire Insurance, which is said to offer exceptional advantages to one who proves himself trustworthy, industrious, and of good business capacity. In a large Marine Insurance Company, like Lloyd's, an underwriter may receive £2,000 a year, and the Managers of the leading Insurance Companies receive incomes that are larger even than this. Speaking generally, 'there are' few openings "in the city" that offer greater opportunities to the really clever man than those offered by Insurance Companies.

The President of the Institute of Actuaries in his presidential address made the following interesting statements:—"He thought that the great Government Departments would require to have actuaries permanently attached to them. The profession was not so overcrowded as Law and Medicine, and though through amalgamations the number of Companies had decreased, the business was greater than ever, and probably would further expand, so that more actuarial assistance would be required. He recommended only young men of good education and fair mathematical knowledge to undertake the long course of study required to pass the examinations for Fellowship."

For select list of Schools and Tutors consult Appendices IV and V (Mr. Hampson's Classes).

XIII.—LAND AGENTS & SURVEYORS.

Course of Training.—It is very desirable that a youth intended for the profession of Land Agent or Surveyor should have a good general education, remaining at school long enough to pass either the Oxford or Cambridge University Senior Local Examination. If this is not practicable, he should attempt the Preliminary Examination of the Surveyors' Institution, the objects of which are: (1) To secure the advancement and facilitate the acquisition of that knowledge which constitutes the profession of a Surveyor; and (2) to promote the general interests of the profession, and to maintain and extend its usefulness for the public advantage.

The subjects of the Preliminary Examination are:—Arithmetic; Elementary Algebra (up to but not including Quadratic Equations); English History (from the Roman Invasion to the present day); Composition and Writing from Dictation; Euclid—the first three books *or* Theoretical and Practical Geometry; and Elementary Latin, *or* French, *or* German.

The examination is held annually in January—in London, Manchester, Glasgow, and Dublin. Entries, accompanied by a fee of one guinea, must be forwarded to the Secretary not later than the end of the month of September preceding.

- are the following:—
1. The Matriculation Examination of any University in the United Kingdom.
 2. The Oxford and Cambridge Senior Locals.
 3. The Oxford and Cambridge Junior Locals (Honours).
 4. The Higher or Leaving Certificate Examination of the Oxford and Cambridge Schools Examination Board.
 5. The Senior or Honours Certificate of the Central Welsh Board.

Three courses are open to the youth who desires to qualify for the profession of Surveyor. He may become —

1. An apprentice in a Land Agent's or Surveyor's Office;
- or 2 A student in an Agricultural College;
- or 3 He may take a University College Course.

1. An Apprentice to a Land Agent or Surveyor is required to pay a premium, the amount of which varies in different localities. He will be expected to do ordinary office work, making himself acquainted as well as he can with the details of land agency or estate management. There are now many opportunities of acquiring this knowledge, as it is becoming usual to place the management of estates in the hands of professional land agents. An apprentice has therefore an opportunity of learning a good deal about

estate management, local land customs, leases, the duties of landlord and tenant, and so on. In many offices, particularly provincial offices, the profession of surveyor is united to that of land agent. The apprentice may thus learn the details of surveying. Meanwhile, as opportunity offers, he should prepare himself for his future examinations. His office duties will, doubtless, interfere with this to some extent; but still there are many opportunities for continuing his studies, and they should not be neglected. He should give attention to mathematical subjects, especially trigonometry. At the conclusion of his apprenticeship, if he has been ordinarily diligent, he will have gained a good practical knowledge of land agency, estate management, and surveying.

II. The Second Course open to a youth on leaving school is to enter as a student at an Agricultural College. There are several such Colleges in the kingdom—Aspatria, near Carlisle; the Royal College at Cirencester; the Harper Adams College at Newport, Salop; the College at Wye, Kent; the College of Agriculture, Holmes Chapel, Cheshire; and the Uckfield Agricultural College, under the East Sussex County Council. The chief Scotch College is the West of Scotland Agricultural College at Glasgow. We may take the first two, Aspatria and Cirencester, as typical. At neither is there an entrance examination; the best preparation for the course of study is a good general education. At Aspatria the fees are—for students under 20 years of age, 30 guineas a term; over 20 years of age, 33 guineas a term. There are three terms in the year. Thus the expense falls a little short of

£100 a year. The course of study embraces theoretical and practical work, and there is careful preparation for the examinations of the Surveyors' Institute and of the Royal Agricultural Society. Scholarships and other prizes are offered which materially reduce the cost of the education. The fees at the Royal Agricultural College at Cirencester are as follows:— For "In-students" £45 a term; laundress £2 2s. a term; private rooms 10 guineas a term. This means an annual cost of nearly £172. "Out-students" pay an entrance fee of £5, and their term's fee is £25. This includes the use of chemical apparatus, and all College charges except books, fines, and damages. At Cirencester also, there are valuable scholarships to be gained. In all the Agricultural Colleges theory and practice go together, and special attention is paid to the details of estate management and to forestry. This may be commended to the notice of intending candidates for the Indian forest department.

III. The Third Course is that of a University College. In some of the Universities special facilities are provided for the study of Agriculture. This is the case at Cambridge, at the Armstrong College, Newcastle-upon-Tyne, and at the University, Leeds. The subject is also taught at Reading University College, at the University Colleges of Bangor and Aberystwyth, and at the University of Edinburgh. Proficiency in the subject is recognised at some of these institutions by a Diploma of Agriculture, the examination for which, however, is quite open.

The Surveyors' Institution offers annually, three scholarships, tenable for 3 years to intending land

agents or surveyors, viz.:—one of £80 per annum at Cambridge; another of £50 per annum at the Armstrong College, Newcastle-upon-Tyne; and the third, of £50 per annum at the University College of North Wales, Bangor.

It is almost essential to future success that a young Land Agent or Surveyor should possess the certificate of the Surveyors' Institution. The Agricultural Colleges, as we have said, make special preparation for the examinations. Candidates for the Preliminary Examinations must be about 16 years of age, and (1) be or about to be pupils of Surveyors, or (2) be studying with a view to entering the profession at such places of professional instruction as the Council of the Institute may approve. The subjects of the examination have been given above. On attaining the age of 18, those who have passed the Preliminary Examination or its equivalent may be enrolled as students. The Surveyors' Institution holds also three professional examinations: (1) The Associateship Examination, qualifying for the class of Professional Associates; (2) the Fellowship Examination, qualifying Professional Associates for the class of Fellows; (3) the Direct Fellowship Examination, by which non-members may qualify for the class of Fellows. These Professional Examinations offer considerable choice to a candidate. He may enter for Land Agency, or Valuation, or with a view to becoming a Quantity Surveyor or a Building Surveyor. Details of the subjects of all the examinations may be obtained from the Surveyors' Institution, 12 George Street, Westminster, S.W.

Prospects.—A young man who has been successful in these examinations has the highest recommendation for employment. If he has not the advantage of belonging to a family in the profession and at once entering the family office, he should, if possible, seek employment with some reputable firm as assistant. It is hardly advisable to begin business on his own account at once, unless, of course, he has a promising opening. A few years' service with a good firm affords excellent training. The remuneration varies with localities, but is seldom under £100 a year as commencing salary. There is always a demand for assistant surveyors in connection with railways, harbour construction, and similar works, and the salaries are fairly liberal. The post of borough surveyor is valuable. Even in a small town a borough surveyor seldom receives less than £250 a year; and in larger towns he receives considerably more, £400 to £800. In some offices a quantity surveyor is paid according to the amount of his work. A building surveyor receives good remuneration, and the services of officials of this class are likely to be in increasing demand in these days of extended Municipal Government. There are also important Government posts open to surveyors and land agents, both at home and in the Colonies, with salaries ranging from £125 to £1,000 per annum, followed by pensions on retirement on the usual Civil Service Scale. Land agency is likely to be more and more remunerative. It is becoming usual, as we have said, to place the management of estates in professional hands, and the land agent in this way adds considerably to his professional income. The ideal employment of this character is the office of

steward of a large estate. The steward has usually a pleasant house and excellent surroundings, with an income sufficient to maintain his position. He lives, in fact, the life of a country gentleman with his hands always full of interesting work, which gives him a unique position and authority in the district in which he lives.

Select list of Colleges (for further details consult Appendix I):—

Armstrong College of Science, Newcastle-on-Tyne.

University College of Wales, Aberystwyth.

University College, Reading.

The Agricultural College, Aspatria.

The Harper-Adams Agricultural College.

The Glasgow and West of Scotland Technical College

Bradley Court, Mitcheldean.

XIV.—AUCTIONEERS.

Qualifications.—The profession of Auctioneer has of late years become popular, and its status has considerably improved. It has many advantages, and its duties are multifarious and often interesting. A successful auctioneer is a man of sound judgment, sterling honesty, wide experience, ready-witted, resourceful, and a good judge of men. With his business as auctioneer he often combines valuation, fire and life assurance, shipping agency, land and house agency, the collection of accounts, broker's business, secretarial and accountant's work. It is evident, therefore, that a youth intended for the profession should have all his wits about him, and be possessed of a good general education, with considerable skill in arithmetic. He should be encouraged to use as much of his spare time as possible in wide and miscellaneous reading. The Auctioneers' Institute of the United Kingdom has for one of its objects the better definition and protection of the profession by a system of examination, and the issue of certificates on the results of such examinations. It must be understood that these certificates are in no way necessary, but they are extremely useful, and are doing much to raise the status of the profession. A youth who intends to become an auctioneer would do well, therefore, to enter for the examinations.

Examinations.—The first examination is the Preliminary, which qualifies for the grade of Studentship of the Institute. It is held annually in March or April. The fee is two guineas, and the subjects are:—

1. Compulsory:—

Writing from Dictation; an English Essay; Elementary Book-keeping; Mathematics, including Arithmetic, Mensuration of Plane Surfaces, Elementary Algebra, Geometry, and the first two books of Euclid; Geography of Great Britain and Ireland; History of England from the Norman Conquest, with the 19th Century as a special period.

2. Optional:—

Two of the following subjects must be taken: Shorthand; Elementary Latin; French; German; General Intelligence (questions upon current events and general topics).

Among the examinations exempting from the Preliminary are the Oxford and Cambridge Senior Locals, the 1st class certificate of the College of Preceptors, the certificate of the Oxford and Cambridge Schools' Examination Board, the commercial certificate of the London Chamber of Commerce, and the degree or the matriculation of any University of the United Kingdom. Candidates for the Preliminary must be under 21 years of age, and in or about to enter the employment of an auctioneer or estate agent or valuer, either as a clerk or articulated pupil, or studying, with a view to such employment, at some Institution approved by the Council. Subsequent examinations admit to the grades of Associate and Fellow of the Institute.

The Intermediate or Associateship Examination is open to candidates who are not less than 19 years of age, and are either students of the Institute, or articled clerks of at least three years' service, or, not being articled clerks, have been employed for at least 5 years in the office of an Auctioneer, Estate Agent, or Valuer. The subjects of examination are:—Book-keeping, Mensuration, the use of Valuation Tables, the Law of Landlord and Tenant (including the Law of Dilapidations and Fixtures), together with Land Surveying, or Measurement and Valuation of Dilapidations, or Estate Accounts. The examination fee is two guineas. The Final or Fellowship Examination is open to Associates of not less than 23 years of age. The subjects are what may be considered professional. Candidates cannot become Fellows until they are Auctioneers.

In addition to the foregoing there is also what is termed the Direct Final Fellowship Examination, the subjects of which are identical with those for the ordinary Fellowship Examination, with the addition of Book-keeping and Law of Landlord and Tenant.

This examination is open to (a) Fellows and Associates previously admitted under the Practice Qualification and (b) Non-members. The fee is three guineas.

Full details of all the examinations may be obtained from the Secretary of the Institute, 34 Russell Square, London, W.C.

A boy may enter an auctioneer's office as an ordinary clerk, in which case his upward progress

will be slow and his prospects uninviting, or he may enter as an articled clerk. In this case, a premium will be required, varying from 100 to 300 guineas. The boy's future success will depend upon his industry and insight. He will have to keep his eyes open, and gain acquaintance with the details of the business transacted in his office. If he should decide to combine with this daily experience a course of study, such as that mapped out in the higher examinations of the Auctioneers' Institute, he would be admirably equipped for beginning business on his own account.

Prospects. — The success of a young auctioneer depends to a considerable extent upon his skill in detecting and advertising the strong points in what he has to sell, his readiness of speech, his quickness in observing and making use of the incidents of a sale, and, above all, in his absolute trustworthiness. With such qualities he is certain of clients. The bulk of the best sales are put into the hands of solicitors, and when solicitors meet with an auctioneer of the kind we have described, it is to their interest to employ him. A young auctioneer must be careful to comply with the conditions under which he can exercise his calling. He pays £10 a year for his licence; but he can act as appraiser or house agent without further licence. Where goods are carried about for sale from place to place, a hawker's licence of £2 a year is required. The commission for sales varies with the class of articles sold and may be fixed by previous arrangement. The selling by auction of landed property is generally remunerative. Par-

particulars are given below. Auctioneers are supposed to be able to add to their income by "buying in" things of value, and disposing of them afterwards on terms advantageous to themselves. In large centres of population, auctioneers are in the habit of specialising. Thus, one auctioneer or firm becomes known in connection with pictures, another with books, another with articles of historical value or rarity, another with the sale of large estates, another with house property, another with the property of licensed victuallers, another with the sale of cattle and horses, and so forth. But the auctioneer in country towns and villages finds employment of a miscellaneous kind; he may be described as a general practitioner, not a specialist. An auctioneer's fees for the sale of freehold and copyhold estates and houses and ground leases are 5 per cent. on the first £100; $2\frac{1}{2}$ per cent. up to £5,000; and on the residue above that sum $1\frac{1}{2}$ per cent. There is also the usual commission of 5 per cent. on the amount paid for fixtures, furniture, and effects, up to £500, and $2\frac{1}{2}$ per cent. on the residue. Valuation of property, furniture, &c., for probate or administration is paid at the rate of $2\frac{1}{2}$ per cent. for the first £100, and $1\frac{1}{2}$ per cent. on the residue; for purposes of sale, purchase, or mortgage, 1 per cent. up to £1,000, and 5s. per cent. above, on the full value of the valuation. Under the Bankruptcy Acts of 1883 and 1890, the allowances for auctioneers run thus:—

For Sale by Private Contract for Inventory and Valuation—on the first £100, £1 5s. per cent.; for the next £400, 12s. 6d.; above £400 up to £10,000, 10s.; above £10,000, 5s.

For Sales by Auction (in addition to certain out-of-pocket expenses) of Chattel Property, 5 per cent. on the first £500; 4 per cent on the next £500; above £1,000, 2½ per cent.

For Sale of Estates in Land, including prior valuations for determining the amount of reserve bids, 5 per cent. on the first £300; on the next £1,600, 2½ per cent.; 1½ per cent. up to £5,000; and above £5,000, 1 per cent.

These fees are for the peculiarly auctioneering work; but when an auctioneer combines with such work the duties of broker, house agent, debt collector, and so on, he has the chance of earning a larger income; and his emoluments are likely to increase with years as he gets more widely known in his locality.

For select list of Schools consult Appendix IV.

XV.—ARCHITECTS.

Qualifications.—A boy should not think of becoming an Architect unless he has a decided taste for drawing in all its branches. Given this taste, he should avail himself of every opportunity of developing it. Art Schools, recognised by the Board of Education, and staffed by qualified teachers, afford the best means of instruction and improvement. The best plan is to follow the course of instruction laid down by the Board, laying special stress on Freehand Drawing, Geometrical Drawing, and Perspective. Building Construction is also a most important subject. If a boy attends a Secondary School, he should prepare for one of the University Local Examinations. If he passed the Senior Examination or the Junior in Honours he would afterwards save considerable time, which he could devote to his more strictly professional studies.

Training.—A youth may enter an architect's office as an articled clerk, an assistant, or an "improver." The first course should, if possible, be selected. In almost all offices a premium is required, varying from £50 to 300 guineas, according to local custom or the professional standing of a firm. The term of service may be four or five years, during

which, as a rule, no salary is paid. The expenses, then, that a parent has to face at the outset are a premium, the cost of maintaining and clothing his son for four or five years, and the necessary outlay on the requirements of his profession, instruments, &c. Although there is nothing to prevent a young man beginning business as an Architect on his own account as soon as he completes his apprenticeship, he would be well advised to spend some time as an assistant in a good office, and extend his architectural knowledge, and, if possible, gain an insight into quantity surveying. The examinations held by the Royal Institute of British Architects and some of the Non-Metropolitan Societies allied thereto, are now of recognised value in the profession; and, as a rule, young men who hold the certificates of the Institute have a superior chance of success. There are three examinations, the Preliminary, the Intermediate, and the Final. The Preliminary Examinations are held twice a year, in the months of June and November. The fee for the examination is two guineas. The subjects are as follows:—

1. Short English Composition. Simple subjects to test the candidate's power of observation and description.
2. Writing from Dictation. Clear and well-formed writing, with accurate spelling and correct punctuation, should be aimed at.
3. Arithmetic, Algebra, and Elements of Plane Geometry. The questions in Arithmetic include the first four rules, simple and compound proportion, vulgar and decimal

fractions, and include such as have a practical bearing on the candidate's future work. The Algebra requires the elementary rules, with simple equations, and the use of symbols and factors. In the elements of plane geometry, a knowledge of the first two books of Euclid will be required, and of the subjects treated in them. For the benefit of candidates who have not studied the text of Euclid, alternative questions on Theoretical and Practical Geometry will be set.

4. Geography and History. Short questions in the geography of Europe, especially the British Isles; and the prominent events in English History from the Norman Conquest to the end of the Tudor period.
5. Latin, Italian, French, or German (one language only). One to be previously selected by the candidate. Short easy passages for translation into English, with a few simple grammatical questions.
6. Geometrical Drawing, which includes the construction of scales, and the delineation to scale of some simple plan or elevation of a building: *or* Elements of Perspective—simple problems in perspective. The choice is left to the candidate.
7. Elementary Mechanics and Physics: simple questions on the resolution and composition

of forces, the mechanical powers, centre of gravity, &c. No trigonometrical calculations are involved.

8. **Freehand Drawing from the Round.** Some simple subject.

Persons who have passed (a) the Matriculation Examination of any University in the British Empire; (b) the Senior or Junior (Honours) Local Examination of any University in the British Empire; (c) the Examinations for the 1st Class Certificate of the College of Preceptors; (d) the School or Leaving Certificate of the Oxford and Cambridge Schools Examination Board; (e) the Examination of the Central Welsh Board; (f) the Junior School Examination of the University of London; or (g) such other examination as may be satisfactory to the Board—are exempted from submitting themselves for examination in 1, 2, 3, 4, 5, and 7 of the subjects given above; but certificates of having passed such examinations only exempt applicants in the subjects covered thereby. The following certificates from the Board of Education are accepted as exempting from subjects 6, 7, and 8:—

From subject 6—A 1st class in *both* the Board of Education Examinations; Geometrical Drawing (Subject 1A) and Perspective (Subject 1C)—Stage I.

From subject 7—A 1st class in the two Board of Education Examinations: Subject 6, Theoretical Mechanics, A, Div. 1, Solids; B, Div. 2, Fluids—Stage I.

From subject 8—A 1st class in the Board of Education Examination in Freehand Drawing of Ornament in Outline.

But an applicant claiming exemption from the first five and the seventh subjects who sends, with his application for exemption and evidence in support of it, a set of drawings (not exceeding four) which show his acquaintance with Geometrical Drawing or the Elements of Perspective, and with Freehand Drawing, will be further exempted from subjects 6 and 8, provided his drawings are considered satisfactory by the Board of Examiners. Other Board of Education certificates or cards below the 3rd grade are not required by the Institute. All charges connected with the carriage of drawings and certificates must be borne by the candidates. Applicants unsuccessful at their first sitting may sit again within twelve months without further fee; but, should they fail to pass again, a fresh fee must be paid for every subsequent attempt. "Relegated" candidates who fail to obtain half-marks at a subsequent examination, will not be allowed to sit again for relegated subjects only, but will be required to take the whole examination.

When this examination is passed, the successful candidate is registered as a Probationer of the Royal Institute of British Architects. If he desires to qualify for the next stage, that of Student of the Institute, he must pass the second or Intermediate Examination. He must, however, be at least 19 years of age before entering for it. It is held in the months of June and November, and the fee is three guineas.

He will require a testimonial of fitness from some person of recognised position, and must present "Testimonies of Study," certified as his own work. These consist of nine sheets of drawings neatly and carefully finished, the first six being accompanied by a written description with illustrative sketches. Some of the drawings submitted should be from actual measurement by the candidate. Architectural students of the Royal Academy have certain exemptions from these testimonies of study. The subjects of the Intermediate Examination are mainly professional, dealing with styles of ornament, orders of architecture, and details of building construction. The rule for unsuccessful candidates in the Preliminary Examination applies to the Intermediate also. Probationers who have attended the full course in Architecture at University College, London, or at the University College, Liverpool, or have attended the two years' course at King's College, London, and have obtained a 1st class at the College Final Examination, or have obtained either a 1st class in the Terminal Examinations of the final year, or passed a University Degree Examination in Architecture, at the Victoria University, Manchester, or have obtained the Diploma or Senior Certificate of Glasgow School of Architecture, or who, under certain conditions, have passed the four years' course at the Architectural Association, London, may be exempted from sitting at the Intermediate Examination, "provided that the work done by them during the session be submitted to and approved by the Board of Examiners as Testimonies of Study." A 1st class certificate in the Elementary Stage of the Board of Education Examination in Practical Plane

and Solid Geometry, together with two sheets of drawings illustrating the intersection of solids, will exempt a candidate from that part of the Intermediate Examination dealing with Solid Geometry.. Part of this examination is oral.

The stage next above that of Student is Associate of the Institution. To qualify for this, a candidate must pass the Final Examination. He must be at least 21 years of age. The fee is four guineas. A candidate must send a certificate of fitness from some person of recognised position, and Testimonies of Study certified as his own work. These consist of five sheets of carefully finished drawings, one being a design for a building of moderate size, drawn out as working drawings in plans, elevations, &c. The subjects of the Final Examination are design of buildings, the principal styles of architecture, building construction and materials. The examination lasts six days, the last day being devoted to oral examination on the various papers and the testimonies of study. The rule with regard to failure at previous examinations applies also to the Final Examination. Architects in practice, not less than 25 years of age, and chief assistants over 30 years of age, are excused from the first two examinations and the accompanying Testimonies of Study, if their application for exemption is approved. They are then admitted to the Final Examination, which is conducted in such cases "with especial regard to their professional works and position."

Full details of the examinations may be obtained from the Secretary of the Institute, 9 Conduit Street,

Hanover Square, London, W. But the work required falls broadly into three divisions—a knowledge of the styles of architecture and their characteristic ornamentation, a competent knowledge of building construction and materials, and technical skill in making plans, elevations, sections, &c. Beyond these, in the advanced stages, design is essential; and accurate study and measurement of interesting buildings is most desirable. Evidences of study of this kind are required at the Final Examination. A period of foreign travel, made with the object of professional study, is very valuable; but it is, of course, possible only to a minority of young architects.

Recently the Senate of the University of London have passed a resolution enabling students to obtain the B.A. degree by taking Architecture and allied subjects as a branch in the Honours Course.

Prospects.—It is difficult to give any definite information with regard to remuneration in the profession. In small provincial offices, an assistant may receive from £120 to £150 a year. In larger offices, especially those of recognised standing, there are various grades of assistants with, of course, various rates of payment. Principal assistants are paid at a fairly liberal rate. As a rule, it takes an architect some time to establish himself on his own account. He must get a “connection” for himself, and that usually means a long and hard struggle. If he has sufficient capital he can wait for success. When he becomes established and his work gets known, he can generally earn a good income. Many architects make themselves known by entering for competitions

for designs for public buildings and similar works; and, though they may not succeed in a particular competition, they get their names before the public. An able man, capable of turning out good, honest work, seldom fails of success in the long run.

For select list of Schools consult Appendix IV.

XVI.—GENERAL CLERKSHIPS.

The designation "Clerk" brings before us a vast host of workers in almost every department of professional and commercial activity. The term is somewhat indefinable, for it ranges from the humble junior earning a few shillings per week to the men who hold responsible and lucrative posts with our large firms.

Qualifications.—For all clerkships it is essential that a boy should have had a sound education, as otherwise his chances of promotion will be but small. The subjects to which he should pay special attention are handwriting—which is still, in spite of the general use of the typewriter, of the utmost importance; arithmetic, especially of that portion connected with commercial work, together with a knowledge of rapid methods of calculation; English Composition; a good general knowledge of Commercial Geography and History; Shorthand; and at least one Foreign Language, preferably French, German, or Spanish. These, if combined with sterling honesty of character, and a zeal for work, will certainly secure a moderate and increasing income.

It should not be thought that, because a boy is to become a clerk instead of entering one of the professions, an early removal from school is desirable. He should remain at the Secondary School until he is at least 16 years of age, after which he should, if possible, pass a year or two in a good commercial school where he can learn book-keeping, typewriting and office routine. If a good commercial school is not available he should study at one of the evening schools. For all commercial appointments the Certificates of the Society of Arts are useful.

We have already dealt with Clerkships in connection with Accountancy, Insurance, Banking, the Civil Service (for which consult the respective chapters), so we may here briefly consider some other avenues that call for a Clerk's services:—

- (a) *In a Business Firm.* A Junior Clerk will start with only a small remuneration, perhaps 8s. or 10s. a week, but, if he shows care and diligence, he may soon expect £1 or 25s. If he elects to remain in the office he may obtain £100 or £150; if his ambitions look beyond the office, one of the most promising careers for a clever man is that of Commercial Traveller. Many of our large firms train their own travellers, and a Clerk who takes an active interest in the firm's business, and shows an aptitude for such work will sooner or later get the desired opportunity for advancement. Commercial travellers have been called the diplomats of commerce, and their work is of immense importance to the country. A

good traveller must be smart in appearance, able to talk well, courteous, and yet not easily abashed, and if the goods he is pushing are really worth pushing, he can make an income which will range, depending of course upon the status of the firm which he represents, from £300 to £1,000 per annum.

- (b) *In Municipal Offices.* Salaries range from about £65 to £250 according to a man's experience and worth. Clerkships under the London County Council are filled by competitive examinations, open to candidates who are British born, free from physical defect, and between the ages of 17 and 24. The examination is in two parts viz., I, Preliminary; II, Competitive.

- I. Preliminary:—Subjects (all must be taken)—Arithmetic, English Composition, English History, Geography, Handwriting and Orthography, (to be marked from the papers on English Composition, History and Geography), Euclid, Algebra, and Plane Trigonometry. Special importance is attached to Arithmetic and English Composition. Exemption from Part I is granted to candidates who have passed the Matriculation examination of one of the Universities; the Oxford, Cambridge, or Durham Senior Locals; and Cambridge Higher Local; the Oxford and Cambridge (Joint Board) Schools Examination, Higher Certificate; or certain other equivalent examinations.

II. Competitive:—Subjects (four may be taken in addition to General knowledge and Précis Writing, which are compulsory)—

1. General Knowledge.
2. Précis Writing.
3. English Language and Literature.
4. Pure Mathematics.
5. Applied Mathematics.
6. Modern Languages (two may be taken).
7. Latin.
8. English History.
9. Economics.
10. Outlines of English Local Government.
11. Elements of English Law.
12. Experimental Mechanics.
13. Experimental Physics.
14. Chemistry.
15. Book-keeping and Accountancy.

There is also an examination in Shorthand, which all candidates with a knowledge of the subject should take.

Details can be obtained from the Clerk of the Council, County Hall, Spring Gardens, London, S.W.

The scale of salaries is from a minimum of £80 to £300 per annum, with a possibility of promotion to one of the higher posts with considerably higher rates of pay. There is also a pension on retirement.

In the offices of other County and Borough Councils there are also numerous vacancies, the conditions of appointment and scale of salaries being obtainable from the respective clerks.

- (e) *Solicitors' Clerks.* The solicitor's clerk almost invariably begins at the lowest rung, commencing at the age of 15 or 16. There is no definite standard of knowledge required but a boy should be able to fulfil the requirements outlined at the commencement of this chapter. Appointment is usually obtained by personal application at the office of the solicitors themselves. Among the best offices to enter are those of solicitors who hold public appointments, where a youth may possibly work his way upwards to an important post. The commencing salary is usually small, rising to about £250 per annum in good offices.
- (d) *Shipping.* A sound knowledge of figures, an intelligent grasp of geography, a quick insight into the conditions of the markets, and, if possible, some acquaintance with French, German, or Spanish, will be of the utmost value. A Clerk in Shipping enters upon a five years' apprenticeship,

during which time he receives a payment of £100, in progressive amounts per annum. Good posts are offered as Chartering Clerks, Book-keepers, Cashiers, with salaries of £250 to £400. An able man may also find an opportunity to start on his own account as a Shipbroker, and, of course, if he succeeds, he will then make a large income.

- (c) *Railways.* A very large number of Clerks are employed both in the passenger and the goods departments of our large railway companies. A fair general education, with a knowledge, if possible, of shorthand, are the main qualifications. A nomination should be sought from a Director, and application should then be made to the District Superintendent. An examination has generally to be passed in Reading, Handwriting and Orthography, Arithmetic, English Grammar, Composition, and the Geography of the United Kingdom. The age preferred is about 15. After appointment the Clerk is examined from time to time to determine what progress he has made in fitting himself for the service.

Salaries are small, starting at 10s. a week, and rising by the sixth year to 24s. After this a youth's prospects will depend entirely upon himself; if he shows exceptional intelligence or smartness in any direction, he will receive speedy recognition, and he may attain ultimately to a lucrative and responsible position.

(f) *The Stock Exchange.* The prospects of the man who is content to be just an ordinary Clerk in a Stockbroker's office are poor; the supply is greater than the demand, and he cannot expect a larger salary than £200 per annum as a maximum. On the other hand, it is through a Clerkship that entrance to the London Stock Exchange is secured and the coveted membership thereof obtained. Individual members and firms on the Stock Exchange are allowed to introduce only a limited number of Clerks into "the House," and so a House Clerkship is a privilege. Further, the Committee of the Stock Exchange require that every applicant for admission to membership must have served as a Clerk in the House or the settling rooms for two years (with a minimum service of one year in the House), and exceptional facilities are allowed an applicant who has served in the House or the settling rooms for four years (with a minimum of three years in the House). Thus a Clerkship with a Stockbroker, that carries with it the promise of introduction as Clerk into the House, is much sought after, and a premium is often required. It is the door by which a clever business man may become a member of the Stock Exchange. Members of the Stock Exchange are either brokers or jobbers; the distinction between them is this—the broker transacts business with the outside public, and buys from, or sells to, the jobber, while the jobber deals only with the broker or with

other jobbers, not with the public. It will thus be seen that a young man, seeking service in the office of a broker rather than in that of a jobber, gets a better insight into the whole method of Stock Exchange business, and has a complete view of a transaction from the time when a client gives instructions to the broker to buy or sell until the stock is finally received from the seller or delivered to the purchaser.

- (g) *Cable Companies.* Another field for employment is that of a clerkship in one of the Cable Companies' Offices. The following particulars relate to the Eastern Telegraph Company in particular, but also give some indication of the requirements of other Companies. Applicants must be between 15 and 17 years of age, and free from physical defects. Candidates are appointed after an examination, which is a simple one, good writing and spelling being indispensable requisites. A premium of £48 must be paid by each probationer, £24 on appointment, and the remainder in instalments. The period of probation is 18 months, during which time he receives no salary for the first six months, £2 per month for the next six months, and £3 per month for the remaining time.

The period of training is spent partly in London and afterwards in Cornwall. Parents bear the cost of board and lodging while

the probationer is in London, but afterwards it is defrayed by the Company out of the premium.

• On passing the necessary examinations the probationer is placed upon the regular staff, after which promotion depends upon merit and ability, together with seniority. The salaries rise from £48 to £204 per annum, with a special allowance varying from £24 to £150 per annum to those on foreign service.

For select list of Schools consult Appendix IV.

XVII.—FARMING.

Farming is our oldest industry, and its prosperity is a matter of concern to the whole nation. Now there are many lads who are naturally attracted to an out-door life, and parents should give those inclinations due consideration. Many a boy, if his energies are allowed to be applied in this direction, will bring happiness to himself and advantage to the country. It is true he must not hope to make as much money as the successful business or professional man, but he has solid compensatory advantages in the freedom and healthfulness of a country life. Foreign competition has made the farmer's lot a difficult one, and a youth, to be successful in the present day, must be well grounded in the technical as well as the practical aspects of his industry; while he is thoroughly conversant with the internal working of a farm, he should know all that science can tell him about soils and manures, he should understand the latest dairying processes, he should keep his eye on every movement of the foreign producer, he should study the conditions of the market, and be ready to avail himself of all subsidiary sources of income, such as fruit-growing, poultry-keeping, &c.; if he is strenuous, economical, intelligent, the young farmer may still hope, in spite of all competition, to secure a moderate and sufficient income. The importance

of a proper training in Agriculture is recognised by the State and by the County Councils. The Board of Agriculture already votes over £8,000 per annum to educational institutions, which afford training in agriculture, while thirty County Councils have voted £40,000 for the encouragement of agricultural education. The "Collegiate Centres" financially assisted by the Board of Agriculture are:—

University College, Reading.—Incorporated in 1896, and affiliated to the University of Oxford. Diplomas are granted, after a very thorough course of instruction, in Agriculture and Horticulture. For particulars, apply F. H. Wright, and consult Appendix.

University of Cambridge Agricultural Department.—The course of study extends over two, or in some cases three, years, and a Diploma is granted in Agricultural Science. The University farm is at Impington. * For particulars, apply T. B. Wood, M.A.

University College of Wales, Aberystwyth.—Apply J. H. Davies, and consult Appendix.

University College of North Wales, Bangor.—Apply J. E. Lloyd, M.A.

Armstrong College of Science, Newcastle-on-Tyne.—Apply F. H. Pruen, and consult Appendix.

Head of the Agricultural Department—Professor D. A. Gilchrist, M.Sc., F.R.S.E.

Course of Study.—(1) A course leading up to the Degree of B.Sc. in the University of Durham; (2) A winter course preparing candidates for the College Diploma in Agriculture,

and adapted also for candidates preparing for the National Diploma in Agriculture. The Degree course extends over three years after the student has passed the Matriculation Examination. The College Demonstration farm is at Cockle Park, near Morpeth, and is worked in conjunction with the Northumberland County Council.

Harper-Adams Agricultural College, Newport, Salop.—
Apply R. P. Liddle, and consult Appendix.

This is an Endowed College, and possesses its own farm of 230 acres.

Courses of Study.—(1) Diploma course of an advanced character, extending over two years, at the end of which examinations are held and a Diploma awarded. This course is suitable for Land Agents, and prepares students for such external examinations as the National Diploma in Agriculture, etc. (2) Certificate course designed for those who require a practical training with a view of farming at home or going abroad to the Colonies, etc. Short courses are planned from time to time for those who are unable to take one of the long courses.

South Eastern Agricultural College, Wye, Kent.—Apply
H. W. Kersey.

The University of Leeds.—Apply W. F. Husband.

*Midland Agricultural and Dairy Institute, Kingston,
Derby.*—Apply J. F. Blackshaw.

The College of Agriculture, Holmes Chapel, Cheshire.

The Uckfield Agricultural College, Sussex.

Among other Colleges we may mention the Royal Agricultural College, Cirencester, and the Aspatria Agricultural College, Cumberland. A good prepara-

tion for younger pupils is given at Bradley Court, Mitcheldean, Gloucester (see Appendix).

A thoroughly sound and practical training is given at the Agricultural College, Aspatria, at a cost of about 90 guineas per annum. Consult Appendix).

The cost of training at one of the Collegiate Centres will be about £70 per annum, and the course will range from two to three years. The summer vacations should be spent, if possible, on a farm, and during the shorter vacations of Easter and Christmas a visit to the Continent to learn something of the latest methods of agriculture and dairying will be time wisely spent, and the expenditure necessary will be light. If we calculate the annual cost of a year's training at £130, and take this on the basis of even a three years' course, we may say that a good scientific training can be secured for £400. After gaining his diploma, a lad will be well advised to work on a farm for a year or two to gain experience, and be content with only a small remuneration for his services.

Prospects.—If a lad is going to farm on his own account, he is now properly trained for his work, and he may hope to be able to live with decent comfort; if he is skilful in stock-rearing, he may do more than well. If this is not his intention, he has the chance of being appointed as manager on a home farm or an assistant to an estate agent, or of securing a post as lecturer under the County Council or at any of the Agricultural Colleges. He is also equipped, if his inclination draws him in that direction, for the many opportunities offered in Colonial life.

For details of the following list of recommended Colleges and Schools consult the Appendices:—

Armstrong College, Newcastle-on-Tyne.

University College of Wales, Aberystwyth.

University College, Reading.

Aspatria Agricultural College, Cumberland.

Harper Adams Agricultural College, Newport, Salop.

Bradley Court, Mitcheldean, Gloucester.

XVIII.—COLONIAL OPENINGS.

Greater Britain beyond the seas needs a share of the best of our sons and offers them vast and splendid opportunities. Canada, Australia, South Africa, are ready to welcome the young settler who is likely to help in the development of his adopted country. At home the professions are over-crowded, and competition for commissions in the Army or for good Civil Service appointments is so severe that a large number of our sons, sound in wind and limb, robust, adventurous, and intelligent, find it difficult to secure congenial employment. To all such we would say: "Why not the Colonies?" Canada has an estimated population of 5,800,000, and she needs 50,000,000. Australasia, again, has a total population of 4,544,434, and she has room for ten times that number; South Africa, with its older colonies and its later ones, offers a great field for British energy; while Southern Rhodesia, where Europeans only number at present 14,000, is waiting to be opened up.

As a general statement, we may say that it is unwise for a youth to go to Canada or Australia with the intention of practising a profession. With improved educational facilities, the colonies are now able themselves to fill up such vacancies as may occur in these paths of life, and the newcomer is apt

to be regarded as an intruder. The emigrant who goes out without definite prospect of work is almost certain, in this sphere, to meet with failure and disappointment. If he goes to these Colonies, he should go there, generally speaking, to engage in farming—whether wheat-growing, or stock-raising, or dairying, or fruit-growing; good openings, however, are to be found in industrial undertakings both in Canada and Australia, as well as in South Africa, and also in mining and engineering operations; in fact there is scope for employment of capital and trained ability in almost every direction.

Recently, for instance, there was a large demand for English Bank Clerks from one of the largest Canadian Banks; but the need then felt must, by this time, be fully supplied.

The Agents-General of the various Colonies are always willing to advise young settlers and to supply a list of official publications. Very useful circulars are issued by the Emigrants' Information Office (established by Her late Majesty's Government in 1886 for the purpose of supplying trustworthy information), 31 Broadway, Westminster, S.W.; the "Professional Handbook" (3d.), published by this Office, gives wise advice to those who are anxious to practice a profession in the Colonies; handbooks are also issued by the same Office on the Transvaal, Orange River Colony, West Indies, Ceylon, &c. These handbooks and the useful "combined circulars on Canada, Australasia, and the South African Colonies," may also be obtained at most of the principal Public Libraries, and should

always be consulted by intending emigrants, as they contain the most recent information about countries in which conditions are always fluctuating. Those who intend to take up agriculture are warned by Colonial Authorities to pay no premiums, and to invest no capital until experience of the conditions of farming in the locality has first been gained.

The information that follows about the various Colonies has been either supplied through the courtesy of the Agents-General or summarised from the official handbooks and circulars.

Extracts have also been made, by permission, from the summaries supplied to the Public School Year Book (3s. 6d., Swan Sonnenschein & Co., Paternoster Square, London), which contains a mass of useful information for parents.

Canada.—Canada, the largest and nearest of the Colonial possessions of the Empire, offers a wide field for the employment of the energies and capital of Public School men. Information and advice may be obtained from the High Commissioner for Canada, 17 Victoria Street, London, S.W.

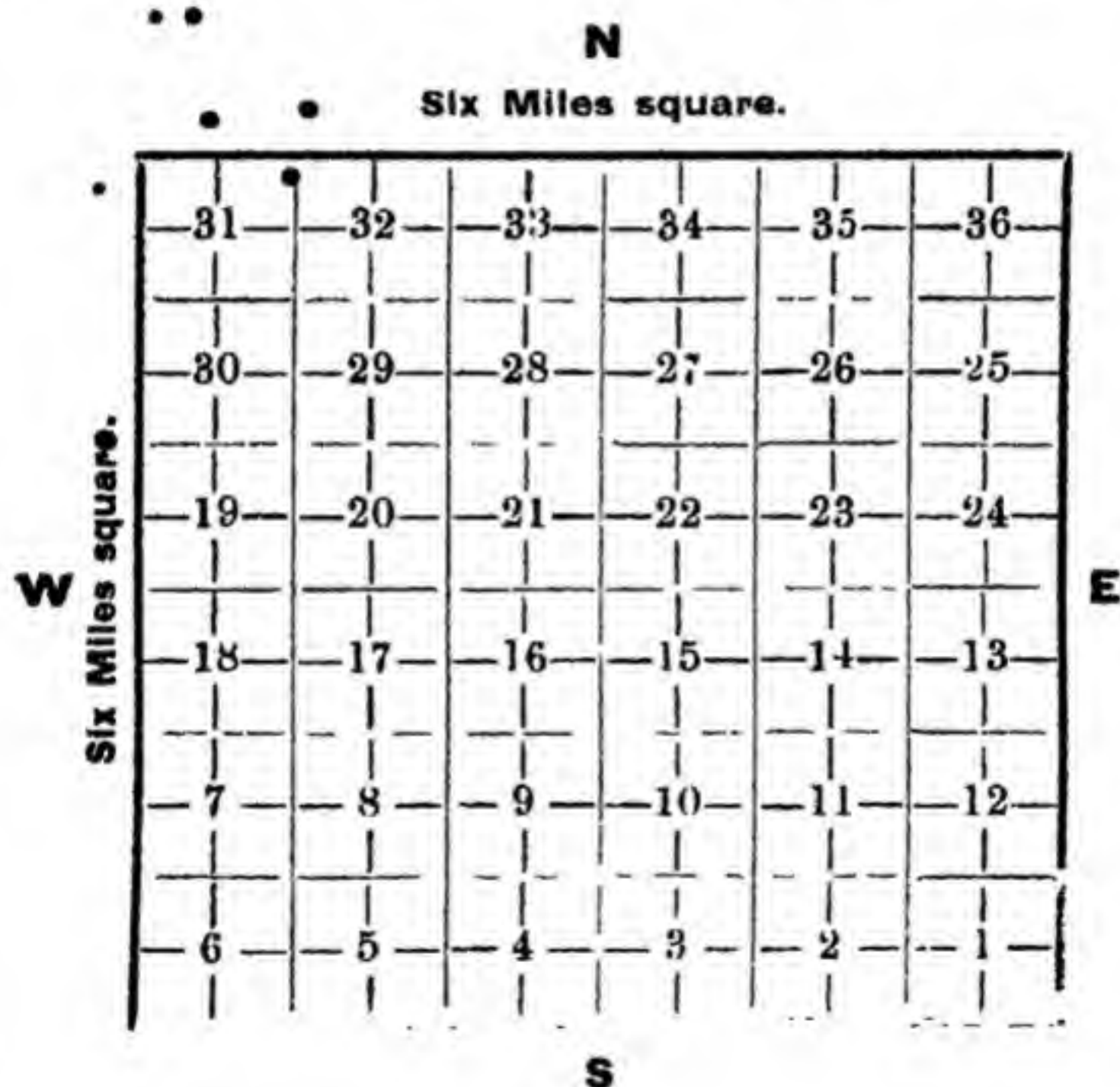
The climate is very healthy throughout the year, and the summers are drier and hotter than in England. The winters vary greatly in the different parts of the country between the Atlantic and Pacific. They last from the middle of November or December to March or April, according to locality, and are very cold (the thermometer falling considerably below zero from time to time); they are, however, bright and dry, and the dryness of the air makes

the cold less keenly felt. The winter sets in later in the Maritime Provinces and the Southern Districts of Ontario than in Quebec, or in Manitoba and the North-west Territories. West and South of Calgary, in the North-west Territories, the winters are more open. It should be remembered that in the Provinces of Alberta and British Columbia, where there is little snow, there are often chill and continuous rain. On the coast of British Columbia the winters are mild, but on the high lands in the interior the winters are similar to those of Eastern Canada. The grapes, melons, and peaches that ripen in the open air in many parts of Quebec, Ontario, and British Columbia, are evidence of the warmth of the summer months; while the excellence of the apples, pears, &c., grown in the Maritime Provinces, show that the climate there is well suited for their production.

A free grant of 100 to 200 acres of forest land is made on the simple conditions of residence and cultivation to any settler over 18 years of age in the Provinces of New Brunswick, Quebec, and Ontario, and of 160 acres of land in Manitoba, the North-West Territories, and British Columbia. In Nova Scotia and on some lands in British Columbia small payments must be made. The settler should have 20s. to 25s. per acre for working capital. He would do well to work for wages on a farm at first, in order to learn the ways of the country, entering his name there in the meantime for a free grant.

The following is the manner in which the free grants of land are made in Western Canada. The whole face of the country is divided into townships,

each six miles square. The plan reproduced below from Mr. J. Foster Fraser's "Canada as it is" will give some idea of the method of division.



Each of the small squares in the plan represents an area of 640 acres, and each quarter section, consequently, one of 160 acres. The Government lands open for distribution as "homesteads" or free settlements are sections Nos. 2, 4, 6, 10, 12, 14, 16, 18, 20, 22, 24, 28, 30, 32, 34, 36. Sections 11 and 29 are reserved by the Government for the provision of education. The land of these sections serves for sites for the schools which are, thus, never more than five miles distant from any quarter section of a township,

and also provides for their maintenance out of the price for which it is sold or the rent for which it is let.

Of the remaining sections, Nos. 8 and 26 belong to the Hudson Bay Company, and may be purchased from that Corporation, while all the rest are the property of the Canadian Pacific Railway Company, and may, likewise, be purchased or rented by settlers.

As a general rule, an emigrant should not claim his free grant of 160 acres at once. It is a common practice for a new comer to make arrangements with a farmer in the neighbourhood of the township in which he intends to farm, and, in return for his help, to receive his board and perhaps, about £12 per annum. He can then, as he acquires experience, claim his quarter section, and in most cases, make an arrangement with the farmer for whom he has worked for the loan of his horses and implements to get the land into order giving in return one-third of the first year's crop.

For further particulars of these free grants, farming, price of land, working expenses, etc., emigrants should consult the Canada Handbook, issued annually by the Emigrants' Information Office, 31 Broadway, Westminster, S.W., price 1d., post free. The book above referred to, "Canada as it is," may also be consulted with profit.

Apply for further particulars either to the Chief Clerk, Emigrants' Information Office, 31 Broadway, Westminster, S.W., or to one of the following Canadian Government Agencies:—London, The High

Commissioner for Canada, 17 Victoria Street, S.W., and Emigration Department, Trafalgar House, 11 and 12 Charing Cross, W.C.; Liverpool, Mr. A. F. Jury, Old Castle Buildings, Preeson's Row; Birmingham, Mr. G. H. Mitchell, Newton Chambers, 43 Cannon Street; Glasgow, Mr. M. Mc.Intyre, 35—37 St. Enoch Square; Exeter, Mr. H. M. Murray, 81 Queen Street; Belfast, Mr. J. Webster, 17—19 Victoria Street; York, Mr. J. H. Burnett, 16 Parliament Street; Aberdeen, Mr. J. J. Mc.Lennan, 26 Guild Street; and Dublin, Mr. E. O'Kelly, 44 Dawson Street.

The above-mentioned Canadian Government Agents supply letters of introduction to the Government Agent in Canada, which intending settlers will find useful. A collection of the natural products and manufactures of Canada can be seen at the Imperial Institute, South Kensington, London, S.W.; and specimens of grain of all kinds from the Government Experimental Farms are on view at the Emigration Offices of the Canadian Government, 11 and 12 Charing Cross, W.C.

The necessaries of life, except fuel and clothing, can usually be bought more cheaply than in England, but luxuries are dearer. House rent, clothing, fuel, servants, mean a heavier expenditure than in England, but a single man can secure board and lodging at a fairly cheap rate.

Fares from Liverpool or Glasgow to Quebec are liable to change. At present they may be allowed for as follows:—Saloon, from £10; 2nd Class, from £7; Steerage, from £5 10s. This fare includes a free

allowance of luggage of 10 cubic feet for each steerage passenger with a proportionally larger allowance for saloon and second class passengers.

For those going further west, the following quotations of railway fares may be of service:—

Quebec to Montreal	...	...	£1	2	11
" Ottawa	...	...	1	13	4
" Toronto	...	...	1	13	9
" Port Arthur	...	...	3	19	2
" Winnipeg	...	...	3	19	2
" Brandon	...	...	4	4	10
" Regina	...	...	4	14	2
" Calgary	...	...	5	14	2
" Vancouver	...	...	8	7	9

The following suggestions have been issued to Headmasters by the Headmasters' Conference, and may be of interest to parents who have sons at the Public Schools:—

1. Boys intending to emigrate to Canada should be introduced by the Headmaster to Mr. W. A. Evans, Secretary to the Headmasters' Conference, 12 King's-Bench Walk, Temple, E.C., to whom should be sent the Form of Introduction filled up according to the accompanying directions.

2. Intending emigrants should purchase the Handbook to Canada (price 3d.), issued by the Emigrants' Information Office, 31 Broadway, S.W.

3. It should be carefully explained to those boys intending to farm in Canada (*a*) that, in the first instance, they must be prepared to work as ordinary day labourers under a farmer for about two years before taking up land of their own; (*b*) that if they wish to become students at

(1.) The Ontario Agricultural College, Guelph,

(2.) The High River Agricultural College, Alberta,

they must have done a year's practical work on a farm in Canada before they can enter as students.

4. A Handbook giving full particulars as to the Ontario College of Agriculture, issued by the Agricultural Department of the Government of Ontario, can be obtained *gratis* from the Secretary, Ontario Immigration Office, Water Lane, Liverpool.

5. Boys intending to enter business in Canada will be introduced by the Secretary to the Headmasters' Conference to the Hon. Secretary, British Public Schools Association of Canada, 328 Sherbrooke Street, Montreal, Canada.

6. Boys wishing to enter the Engineering Department of a Canadian University can communicate through Mr. W. A. Evans with the Acting President of the University of Toronto, Ontario, Canada.

7. Mr. Evans will be able to place boys in communication with farmers in Canada, who have expressed a willingness to take Agricultural pupils, and who have been recommended by

- (1.) The Government Department of Agriculture, Toronto.
- (2.) The Government Department of Agriculture, Edmonton, Alberta.

8. It is suggested that members of the Conference should place in their School Libraries :—

- (1.) The map of Canada issued by the Canadian Pacific Railway Co., Cockspur Street, S.W.
- (2.) The weekly newspaper, "Canada," and the "Empire Review."

We now append a few particulars about the individual Provinces of the Dominion.

Quebec.—The eastern townships, generally speaking, are the best for English settlers. Montreal, Quebec, and the United States provide markets close at hand, and land is cheap.

Dairying has become of late a most important industry, and there is a new Dairy School at St. Hyacinthe where lessons are given. There are now about 1,900 cheese factories and creameries in the Province.

A knowledge of French will be valuable to a settler in this Colony.

A College of Agriculture is being established at St. Anne de Bellevue, 21 miles west of Montréal.

Ontario.—Farming is the main industry. England and the United States are excellent markets, and communications by road, rail, and water are good. The export of live stock, dairy produce, and fruit from Ontario is becoming much more important than that of cereals, and mixed farming is much more profitable than wheat-growing only.

The "Niagara Fruit District" of Ontario is sometimes called "The Garden of Canada," and produces immense quantities of fruit. There is a special department of horticulture in the Ontario Agricultural College at Guelph. Intending students must have had a year's experience of farming in Canada and pass an entrance examination in elementary subjects. Each pupil receives wages according to the work he does on the farm, and the net cost of board and tuition need not exceed £10 to £20 a year.

Nova Scotia and Prince Edward Island.—Information about Prince Edward Island may be obtained from Mr. Harrison Watson, Imperial Institute, London, S.W.

The most easterly of the Maritime Provinces offers special advantages to settlers possessed of small capital. The climate is temperate, healthy and invigorating, and, owing to the proximity of the sea, is not subject to extremes of temperature, either in

summer or winter. The soil is rich, fertile, and easy to work, and vegetation is rapid. The country is well wooded, and has great variety of scenery. Rivers and lakes are found in profusion, and afford plenty of water power. Good roads and railways intersect the country. In consequence of the indentations of the coast line no part of the Province is more than thirty miles from navigable waters.

Fruit-growing, farming, dairying, stock-raising are all carried on with success. The Annapolis and Cornwallis valleys are celebrated for their orchards, Nova Scotia apples having a world-wide reputation for quality. The improvement of the cold storage arrangements on ships, and the increasing demand in Canada for jam, should further enhance the value of the fruit growing industry. At Truro an Agricultural College is established, where practical information may be acquired free, the only cost to the student being his board, about 10s. to 12s. per week. The same remarks apply to the Horticultural College at Wolfville. Creameries are established at various parts of the Province for the manufacture of butter and cheese, and receive Government encouragement. Improved lands with houses (that is farms) may be purchased in most districts at low rates according to locality and size. There is an excellent system of free education, and the conditions of life are extremely social. Living is cheap. Sport is plentiful, the rivers and lakes abounding in fish, and the woods with game, both large and small.

Nova Scotia possesses one of the finest sea fisheries in the world, and contributes 40 per cent. of the total yield of the Dominion.

The minerals found in the Province comprise coal, iron ore, gold, copper, lead, silver, tin, etc.; limestone, gypsum.

For further information apply to 'Mr. John Howard, Agent-General for Nova Scotia, 57A Pall Mall, London, S.W.

No one should attempt farming, either on improved farms or on free grant lands, unless he has some capital beyond the price of the land.

***New Brunswick.**—The largest and most resourceful of the wonderfully fertile Maritime Provinces, which are very much nearer Great Britain than any other important food-producing area of the Empire.

It is probable that, comparing point with point, advantage with advantage, and resource with resource, no equal sized portion of that wonderful conglomeration of resources, climates and soils known as the British Empire, can equal either in advantages, capabilities, or prospects the Maritime Provinces of Canada.

(1) Position.—45° N. Lat., half-way between North Pole and Equator. Middle of temperate zone. Extreme east of Canada, greatest British colony. All Western produce by Canadian route to England must pass through Maritime Provinces, at least in winter. Only 2,300 miles from England; nearer than any other important food-producing area of the Empire.

(2) Surroundings.—With exception of west and north-west of New Brunswick, connecting with United States and rest of Canada, almost surrounded by sea. North and east, Gulf of St. Lawrence, greatest sea fisheries in the world. South of New Brunswick, wonderful Bay of Fundy.

(3) Climate.—Summers and winters alike characteristically clear, and with much brilliant sunshine. Rainfall over 40 inches per annum, yet nearly twice as many hours bright sunshine in the year as in Great Britain. Worst weather, November and April. No droughts. Fruit blossoms in last fifty-six years never once injured by late frosts.

(4) Physiography.—Coast line of New Brunswick nearly 600 miles in length, with many fine bays and harbours. Surface much diversified, from flat dykelands to mountains nearly 3,000 feet in height. Perfect network of internal waterways, rivers, streams, and lakes. St. John, largest river, over 400 miles long.

(5) Soil and Natural Products.—Central and northern portion of New Brunswick covered with heavy forest. 10,000,000 acres valuable for lumber or pulp wood. Much of woodland good agricultural land.

(6) Transportation Facilities.—Good highways supported by the Government and people at small cost. Steamers run extensively on internal waterways. New Brunswick has more miles of railway per head of population than any country in the world, 1 mile for every 250 people; Great Britain, 1 mile for every 3,500.

(7) Prices of Land and Living.—Crown lands, excellent quality, but not cleared or improved, may be bought outright for about 4s. per acre. Good farming land, cultivated, on railway, may be bought outright for about £2 per acre. Intervale land, £3. Dyke-land from £15 to £30 per acre. All taxes per annum on £500 farm about £3. Fencing and fuel on farms themselves. Obtained for hauling. Coal, 10s. to 12s. per ton.

Hon. C. A. Duff Miller, Agent-General for New Brunswick, 17 Leather Market, London, S.E., will furnish illustrated pamphlets, handbook, and any information relating to the Province, and also illustrated prospectus of the Government training farm, designed especially for boys from the Public Schools of the United Kingdom.

Manitoba and the North-West Territories.—Youths emigrating to Manitoba and the North-west Territories will receive every assistance from the Immigration Office in Winnipeg.

Capital required for a ranch.—The following estimates may be useful, but they are very rough and variable: (1) the capital required (a) per 500 head of cattle is about £2,500; (b) per 1,000 head of sheep about £800; (c) per 100 head of horses about £1,000. (2) 10 acres will carry 1 horse or 1 head of cattle, and 5 acres 1 sheep (but more in North Alberta). (3) Two cowboys will look after 1,000 head of cattle, and one shepherd after 2,000 sheep. (4) Range cattle cost per head £4 to £7; horses, £7 to £15; sheep, 12s. to 18s. (5) Out-

side the range of the chinooks (warm winds) stock must be stall-fed all the winter, on the Alberta ranches stock winter out without danger; within the range of these winds, in ordinary winters, about 200 tons of hay are required per 500 cattle, 50 tons per 1,000 sheep, and 20 tons per 100 horses; hay costs from 12s. to 24s. a ton and upwards. (6) Cowboys' wages vary from £4 to £8 a month, with food and horses.

Ranching of course can be profitably conducted on a smaller scale, but for this purpose a smaller capital than £500 would not be desirable. With this sum, however, the settler could buy a mixed herd of 60 head, consisting of 20 yearlings, 20 two-year-olds, and 20 cows in calf, at an average of \$20 dollars each; or a herd of 50 cows at \$30. The latter purchase is perhaps the better of the two, and would cost £300. The rest of the money would be used for his free homestead farm of 160 acres, his house, food, implements, etc. The cattle have free grazing on the unoccupied land outside the homestead farm.

The principal industries in Manitoba and the North-west are farming and stock raising. For the manner in which free grants of land are made to settlers, consult the general remarks upon Canada, in this chapter. These grants of land are not always procurable near the railway or in long-settled districts. Anyone wishing to take up land in such parts must purchase or rent it. The average size of a farm is 160 acres, taxes on which average \$14 to \$16 a year; 40 acres would be enough for a man to handle with not more than £100 capital, and

with no grown-up children to help him. There is no clearing to be done as in the older Provinces; a pair of oxen will break 1 acre in a day, at a cost of \$3 to \$5; back setting costs \$2 an acre. Owing to the great scarcity of natural timber, trees are being planted by some of the farmers; they are useful for shade and shelter. In dry parts of the North-west Territories irrigation is being successfully resorted to. The soil is for the most part a rich black loam, resting on a deep clay subsoil, but there is also inferior land. The land is cropped with wheat many years in succession. Very few grain crops besides wheat, oats, barley, and flax are grown. Mixed farming is much more likely to be profitable than wheat growing only, and is being rapidly adopted. It must not be forgotten that the crops are liable to damage by sudden and severe frosts. They are sold while still standing, and must come up to a certain definite standard arranged by the Government. Increasing railway facilities, such as those offered by the construction of the new Great Trunk Railway, will throw open much new grain-growing land in the North-western Territories at the expense of land now used by ranchers. The number of central cheese factories and creameries in operation in the new settlements in Manitoba and the Territories steadily increases, of which settlers eagerly take advantage, but the demand for dairy products is still much greater than the supply. Poultry raising is also carried on, but is still not up to the demand.

Manitoba and the North-west Territories offer good openings to farmers with capital. Land is fertile and cheap, and the climate, though one of

extremes, is very dry and healthy. The summer mean is 65° to 70° , the highest temperature in summer is 100° , and the lowest in winter is 30° to 50° below zero, but such extremes of cold and heat are rare. Life is rougher and more isolated than in Ontario, and there are fewer social advantages. Churches and schools are scarce in newer districts, but are numerous along the lines of railway and in the larger settlements.

There is a School of Agriculture at High River, Alberta, a few miles south of Calgary, where students are taught farming, stock-raising, etc.; students are admitted between 17 and 21 years, and preference is given to those who have been at one of the English Public Schools. Expenses for board and tuition are about £100 per annum, but students are paid according to their work. Apply to the Director.

British Columbia.—The Province of British Columbia offers many openings to active and healthy youths with capital. The principal industries are agriculture, mining, fish-canning and the lumber trade. There is probably a good opening for a man who thoroughly understands modern methods of fish-canning. It must be remembered that the country has been only recently opened up by the building of the Canadian Pacific Railway, many parts being still difficult of access and almost unexplored. The best method for any one embarking on agriculture with a capital of from £500 to £1,000 would be to work for a year or two on a farm, and then, when he has to some extent learnt the business, buy a small improved farm for himself. He should on no account pay a

premium as pupil. The mining industry of the Colony has recently made immense progress, and probably offers excellent chances to mining engineers and capitalists proposing to engage in it. In this connection the current Professional Handbook of the Emigrants' Information Office should be consulted.

The climate in certain districts is very similar to that of England, but of course depends to a great extent on altitude, and varies considerably. In the interior and higher lands the summers are hot and dry, and the winters not so severe as those in Eastern Canada. Near the coast and in Vancouver Island the summers are very pleasant, and the winters are mild, with a good deal of wind and rain and occasional snow.

Dairy farming has, of late, received considerable attention. A farmer could make a good start on 50 acres of land.

Australasia.—By the Commonwealth of Australia Constitution Act, 1900, New South Wales, Victoria, South Australia, Queensland, Western Australia, and Tasmania became States constituting the Federal Commonwealth of Australia. New Zealand remains outside the Federation.

For detailed information with regard to Australasia, the handbooks of the Emigrants' Information Office should be consulted.

In cases where such aid is required the various Colonial Governments are ready to allow reduced 2nd class and 3rd class passages to suitable applicants.

Particulars with regard to these reduced passages may be obtained from the Agents-General of each individual colony. The address of the Agent-General of each colony is given at the end of the section devoted to its description.

Generally speaking, there is a demand everywhere in Australasia for fruit growers with a capital of say £200, also for competent men accustomed to the use of agricultural machinery, whereas clerks and shopmen are advised not to emigrate.

New South Wales, the Parent Australian State.
—We are indebted for the brief summary that follows to the courtesy of the Agent-General for New South Wales:—

To the boy fresh from a public school, there is scarcely any country in the world possessing greater attractions than New South Wales, especially if he has a fondness for an open-air life in a good healthy climate. The cost of living is small, and, even though at first one may have to “rough it” a little, that in itself is no hardship to one with a store of good health and British vitality. A new arrival is at once struck by the lack of strangeness in the appearance of the cities, or townships, of the State, or in the manners and customs of the residents. New South Wales, apart from its privilege of self-government, is, in fact, merely a huge county, or shire, situated several thousand miles away from the Mother Country.

With energy, enterprise, and a little capital, combined with patience and perseverance, there is no

reason why success should not attend the young settler's career. While the professions as a rule are somewhat overcrowded, there are good openings in connection with pastoral, agricultural, and mining pursuits.

Sheep farming is, in normal seasons, certainly one of the most profitable occupations in the State, and is a leading factor in its increasing prosperity. It may be pointed out, however, that the new arrival should not embark upon sheep farming as a career unless he has a certain amount of capital, while he who would succeed must be prepared to accept little or no profit over and above expenses during the first two or three years. To those who are possessed of the necessary means and experience, the "homestead lease system" offers a large field of enterprise in what is known as the Western Division, in which large tracts, consisting of vacant lands, or the resumed halves of the old runs, are open to lease in blocks of from 2,560 acres to 10,240 acres, called homestead leases, at a minimum rental of one penny per acre. The conditions are simple—fencing round the outside boundaries of the land within two years, and residence for at least six months of each year during the first five years of the lease.

Land may be purchased at £1 per acre for homesteads of 640 acres, but nearly all of it is uncleared. Payment may be made by instalments.

Modern agriculture being divided into many branches, the new arrival has to decide whether he will take up general farming, sugar culture, dairying or orcharding, &c. In this matter he should consul

old-experienced settlers. Generally speaking, the Eastern Division of the State, embracing the whole of that portion facing the ocean, and covering an area of about 60,450,000 acres, is the most suitable for agricultural and dairy-farming purposes; while the Central Division, comprising an area of 55,460,000 acres, and situate between the Eastern Division and the immense tracts of grazing land forming the Western Division, is admirably adapted for mixed farming.

Sugar is a leading crop of the Northern Districts, while there is an unlimited field for the enterprise of those who are acquainted with the methods of vine culture. Dairy-farming is another very important industry.

To acquire the necessary experience a good method to adopt is to undergo a course of training at the Hawkesbury Agricultural College and Experimental Farm at Richmond, New South Wales, where, under Government auspices, the science of agriculture, and various other sciences connected therewith, are taught by a competent staff. The period of study at this College extends over two years, and every candidate for admission must be over 16 and under 25 years of age. A fee of £25 per annum, payable half-yearly in advance, is charged for the maintenance and education of each resident student. A copy of the Prospectus of the College, containing particulars of the rules and regulations of the College, subjects of study, &c., may be obtained from the Minister of Mines and Agriculture, Sydney, New South Wales, or from the Agent-General for the State, London.

It may be stated broadly, however, that the time spent at this Institution will enable the student to become a thoroughly practical farmer and agriculturist on lines specially adapted for the State.

It need only be added to this necessarily brief summary of some of the openings in New South Wales, the senior State of the Australian Commonwealth, that full information respecting prospects in all branches of life, the cost of living, climate, &c., is gladly supplied (together with useful official handbooks and maps) by the Agent-General for New South Wales, Westminster Chambers, 9 Victoria Street, London, S.W., with whom young men intending to emigrate are advised to communicate before leaving Great Britain.

Fares by British steamer from England to Sydney—3rd Class £16 to £30; 2nd Class from £42.

Queensland.—There are numerous openings available for young men with a little capital, as sugar and coffee planters, dairy farmers, fruit growers, tobacco planters, vine growers, sheep and cattle farmers, and general farmers.

Capital required—sugar planters, about £400; dairymen, about £300 to £500; sheep and cattle farmers, £3,000 to £5,000. The Under Secretary for Agriculture would advise a young man with capital where he could find a station, plantation, or farm on which he could learn his business. There are no salaried positions available. The circular of the Emigrants' Information Office states that there are good openings for small farmers possessed of local

experience with a capital of not less than £50. The price of living is, on the whole, moderate, compared with the average wages.

Darling Downs, in the South, is the only district that can fairly be said to be within the temperate zone; the climate here is delightful nearly the whole year round, and the elevation makes it less enervating than that in other parts of the Colony. The other parts of Southern Queensland, as far north as a line drawn westward from Rockhampton, are semi-tropical; north of Rockhampton is the torrid zone.

- A grazing farm may consist of any area up to 20,000 acres; its rent from $\frac{1}{2}$ d. to 3d. per acre per annum, and it is held by the tenant under a thirty years' lease from the Crown, a tenure equal to freehold. The average rental of farms is about $1\frac{1}{2}$ d. per acre, so that the annual rent of a grazing farm of 20,000 acres would be £120; the survey fee, covering the cost incurred by the Crown in surveying the land, about £60, to be paid by the tenant in five yearly instalments.

In all parts of Queensland farmers must adapt their methods to the climate and soil. In choosing land farmers should make sure of three things, viz, a good soil, permanent water, and an accessible market.

Clearing moderately timbered land costs £5 an acre; but scrub can be felled and burnt off for 30s. and upwards per acre.

- The capital required to work a farm is £100 to £150 per 100 acres, besides the price of the land and

house, and £100 for stock and implements; near Townsville a man should have £200 for 60 acres.

The largest quantities of cheese, butter, and of bacon are supplied on or near the Darling Downs.

Sugar is the product which is perhaps more suitable than any other for cultivation in the Colony, and its production is the most satisfactory of all agricultural industries. As success largely depends on a supply of cheap labour, able to stand a hot climate, the use of Kanaka labour under improved regulations has contributed more than anything else to the prosperous condition of this industry. A settler before he buys land should work on a plantation for eighteen months or so to learn the business.

The Colony is rich in minerals of all kinds, and as irrigation and railway works progress, the mineral industry will doubtless be largely developed. Gold-fields are scattered all over the eastern and northern parts of the Colony, and the Government sets apart a sum of £2,000 for payments for new discoveries in any part of the Colony.

Fares to Brisbane are from £17, 3rd class; and from £44, 2nd class. The address of the Agent-General for Queensland is 1 Victoria Street, London, S.W.

Victoria.—For the small farmer, Victoria offers many attractions. The land is limited, and to a great extent occupied, but it can be bought at a reasonable price. In the inland dry districts good land costs 30s. to 60s. an acre. Farms with fencing and

buildings cost £2 10s. to £4 10s. per acre. First class agricultural land near large towns sometimes costs £20 to £25 an acre, and potato land £30 to £50. Large quantities of wheat are grown, and dairy farming has now become one of the most prominent industries in the Colony. Various other industries, such as horse breeding, fruit growing, market gardening, &c., are becoming of more and more importance, and often give large returns for the skill and capital invested in them. The soil and climate of Victoria are so suitable for the production of grapes, that, with good management and increased experience, the wine industry should become more and more profitable and important. One of the chief difficulties to be contended against in the north-western parts of the State is drought, which during the last few years has caused great damage, but the establishment of irrigation works is rapidly overcoming the difficulty. In the southern and eastern portions of Victoria rain is plentiful every year. The extension of irrigation tends greatly to multiply the number of small owners, and is very likely to largely increase the natural wealth of the country.

There is an Agricultural College at Dookie, in the county of Moira. Instruction is free but fees of £28 5s. per annum are charged for maintenance, etc.; 16 is the minimum age for admission, and the school course is from two to three years. Applications should be made to the Secretary for Agriculture. Fares—England to Melbourne, 3rd class, £16 to £30; 2nd class from £42. The address of the Agent-General for Victoria is 142 Queen Victoria Street, London, E.C.

South Australia.—It is more than seven times as large as the United Kingdom, but its population is only 358,508. The chief products are wheat, wool, copper, gold, fruits, and wine. For farmers with capital the prospects are generally fair, but they vary from season to season owing to the great uncertainty of the rainfall. Fruit-growing and wine-making offer to men of capital and experience steadier prospects than ordinary farming. Fruit growers should have a capital of from £500 to £1,000. There seem to be excellent prospects for dairy farmers. A trade with England is being opened up by means of cool chambers on the mail steamers, which is capable of unlimited expansion. For price of land, and for farming, fruit-growing, &c., see the South Australia Handbook, issued by the Emigrants' Information Office, price 1d., with map.

Fares from England to Adelaide—3rd class, £16 to £30; 2nd class from £42. The address of the Agent-General for South Australia is Threadneedle House, Bishopgate Street Within, London, E.C.

Western Australia.—There is a good opening for market gardeners, fruit-growers, and farmers, with a capital of £300 and upwards, as fruits and vegetables sell at high prices, but all persons should get experience of colonial farming before taking up land. There are three experimental farms at Narrogin in the Northampton district, and at Hamel respectively. Students not less than 16 years old are admitted. Application should be made to the Agent-General. The soil and climate of the southern portion of the State are specially suitable for fruit-growing.

The agricultural industry has been stimulated by the development of the gold fields, and the pastoral industry is now in a good condition. There is possibly an opening for cotton growing in the northern part of the State. There is an abundant supply of cheap aboriginal labour. For price of land, farming, fruit-growing, etc., see the Western Australia Handbook, 1907, issued by the Emigrants' Information Office, price 1d., with map.

The cost of living is high in certain respects, and so is house rent, though clothing is but little dearer than at home.

Under the Homesteads Sections of the Land Act, free grants of 160 acres are made to settlers on conditions of residence and cultivation.

Fares from England to Fremantle or Albany - 3rd class £17 to £30; 2nd class from £42.

The address of the Agent-General for Western Australia is 15 Victoria Street, London, S.W.

Tasmania.—The delightful climate of Tasmania, its beautiful hills and valleys, its abundance of water, its flowers and hedge-rows, would seem to offer more attractions to British settlers than the hot summers, the long droughts, and endless plains of many parts of Australia. There is perhaps no Colony which offers so many advantages to a man of small income, who is in search of a comfortable home, an equable and temperate climate, and pleasant society. Though the manufactories are still very small, capitalists will find continual opportunities for investing in fresh

undertakings. There is no such poverty there as in England, the necessaries of life are cheap, wages are high, and a man with a family will often have a much better chance of placing out his children well than he would have at home. The gradual development of the mining industry has been the chief feature of the last few years, and miners have been well employed in consequence. Farmers with a capital of not less than £400, which would be required for buying and stocking the land, erection of residence, &c., are likely to succeed in Tasmania; but they should not invest their capital before they have gained experience of the State. There is little opening for professional men. It is necessary to remember that the greater part of the island is wild and unsettled; that, though Crown land is cheap to buy, it is laborious and expensive to clear; and that to become the owner of a good farm requires capital of £1 to £3 an acre besides the price of the land, or many years of hard work. In general farming, such as cereals, hops, or stock raising, dairy farming, and breeding of stud sheep, there would seem to be good openings for English farmers. The soil, climate, and herbage are excellent, land is cheap, and droughts are rare; but as it is, considerable quantities of agricultural and pastoral produce are imported every year. Fruit farming, however, is probably the most profitable industry of all.

Fares to Hobart Town—3rd class £17 to £30; 2nd class, £38 to £43.

Further information with regard to Tasmania, may be obtained from the Agent-General for Tasmania, 5 Victoria Street, London, S.W.

New Zealand.—The summer months in New Zealand are the winter months in England, the Colony being in the Southern Hemisphere, and the northern part is hotter than the south. The great length of the Colony from north to south secures great diversity of climate and products. The long periods of drought to which the Australian Colonies are subject are unknown in New Zealand. The climate is like that of Great Britain, only warmer and more equable. The climate on the west coast in both islands is more equable than on the east, but the rainfall is greater. The whole country is very healthy, and the death-rate is exceptionally low.

There are in the two islands, taken together, and exclusive of native lands, many millions of acres of Crown lands still remaining for settlement. They are mostly covered with forest, which costs from 15s. to 30s. per acre to clear, but the great size of the trees and richness of the vegetation prove the fertility of the soil. Some of the open land near the rivers and lakes consists of swampy flats covered with New Zealand flax and Tussock grass, which are costly to drain, but would in all probability give valuable returns.

New Zealand is, firstly, a pastoral, and, secondly, an agricultural country. Sown grasses are grown almost everywhere, more especially in the west and south of the North Island. The great capacity of the land for receiving these grasses, and the facility with which much of the bush can be burnt down, sown over without previous ploughing, and then in a few weeks become converted into good grazing land, has

made the Colony a wool and meat producing country. Wool is the staple product. The sheep and cattle runs cannot, as a rule, be compared in size to those in Australia; but the land, acre for acre, is much more productive to the wool-grower. Almost every farmer does something in raising stock, and the number of dairy farms in connection with arable is large. Owing to the genial climate, stock, at least in the North Island, need not be housed in winter. The grass land is nearly equally divided between the two islands; but, while in the North Island by far the greater part has been laid down in grasses without previous ploughing, in the South most of it has had to be ploughed first. This is accounted for by there being more bush in the North. On the other hand, although the Colony is mainly pastoral, it is still very largely agricultural, and produces large quantities of wheat, oats, barley, and, in Auckland, maize; the yield per acre is larger than in any other Australasian Colony. There is much good agricultural land in both islands, but, unlike the grass land, it is not equally divided, the South having more than eight times as many acres of agricultural land as the North.

Farming, including the keeping of live stock, is the most important industry in New Zealand. The soil is very fertile, and the climate excellent. Canterbury and Otago are the most important Provinces from an agricultural point of view. The price of improved land greatly varies, according to its quality and the improvements upon it. Speaking generally, land may be bought in Auckland at £8 to £20 an acre; £4 to £16 in Hawke's Bay; £4 to £20 in Taranaki, or to rent near a town, 15s. to 30s., or in

the country, 5s. to 10s., both with house; from £7 in Wellington; £3 10s. to £30, or an average of £8 to £15, in Canterbury, and £3 to £15 in Otago.

Most of the best unimproved land requires clearing, which involves great labour and expense. A man, therefore, with sufficient capital should buy improved land. The cost of clearing greatly varies, according to the heaviness of the timber. Speaking generally, it may be burnt off, sufficiently to pasture sheep on, for about 30s. an acre, and many contractors will do it for less. If the stumps of the trees are removed, so as to make the land suitable for ordinary ploughing, the cost will be more. Open fern land, as in the province of Auckland, and elsewhere, can be burnt off for a few shillings an acre; as a rule it has a light soil.

The capital required for working a farm, exclusive of the price of the land, may be put down at not less than 30s. to 60s. an acre; but a man who is content to rough it, and work part of his time for others at wages, may begin on less.

Fruit is now being successfully exported to London; the trade in fresh, tinned, and preserved fruit is capable of very great expansion. There are about 27,000 acres of orchards, nearly half of which are in the Province of Auckland. Fruit grows well from one end of New Zealand to the other, but the sub-tropical kinds, such as oranges, lemons, limes, grapes, and olives, are for the most part limited to the warmer climate of the Province of Auckland; even bananas grow in the far north.

The export of phormium (New Zealand hemp) has recently assumed large proportions, the quantity of hemp exported in 1905 being nearly 28,000 tons. There is also an increasing export trade in butter and cheese from Wellington, Taranaki, Otago, and other places. The Government of New Zealand is actively interesting itself in this industry.

The returns of the exports show the great advance of the frozen meat trade, mainly mutton, which has only been in existence since 1882. With the single exception of wool, it is now the largest article of export. The carcasses are sent over whole. It is calculated that sheep can be profitably raised to sell at the London docks at 3½d. per lb. Canterbury supplies much the largest number of frozen sheep, then Wellington, Hawke's Bay, and Otago. Two-thirds of the frozen beef come from Wellington and Taranaki, but the quantity of exported beef is very small as compared with that of mutton. There are numerous meat-freezing works in the Colony.

The climate, pastures, and plentiful water supply, make New Zealand, especially Taranaki and the west coast of the North Island, and Otago in the South Island, specially adapted to the manufacture of butter and cheese. Great attention is now being paid to this industry, and the quality both of cheese and butter has greatly improved.

The fine climate, the richness of much of the soil, the high average yield of wheat, the fact that New Zealand stands first of all the Colonies in its sheep bearing capacity, and that its mutton commands the highest price in the English market, all tend to make

the Colony a promising field for farmers and agriculturists generally, and to inspire the belief that there cannot be much doubt as to the future of those who are prepared for steady work, some self-denial, and "roughing it" a little during their first years as colonists. •

Farmers and others with a little money will find a good opening, if they are prudent, and do not mind working for wages while they are looking about them, and gaining information as to the country and its capabilities. It is far better for a man, however much he may know of English farming, to work for wages on a farm in the Colony for at least twelve months until a reasonable amount of local experience has been gained, justifying the investment of capital, than to take up land immediately on arrival in the Colony. A man with a small capital who intends to succeed as a farmer should also remember that he must himself work hard upon the land; that, although it is often advantageous to buy land from colonists instead of taking up Crown lands, he must not pay too high a price for it, nor be over anxious to extend his farm as soon as he finds he is succeeding. The most prosperous branches of farming are sheep breeding, for the wool and the frozen meat trade, and dairy farming; the production of cereals is sometimes less profitable, owing to the competition of other countries. Lands purchased from settlers are generally accessible and more or less cleared and drained, whereas ordinary Crown lands are for the most part not so easy of access, and require to be cleared, fenced, &c. On the other hand, roads are being everywhere made, the climate is good, and the

land once cleared speedily gives good returns. For a farmer with a capital of £500 to £1,000 the North Island is by many considered preferable to the South; land is dearer, but it is better, though there is not so much of it.

(The above summary dealing with New Zealand appears in the Public School Year Book, 1908, and is reproduced here, with some slight additions, by the courtesy of the Editor.)

Fares from England to Dunedin, Christchurch, Wellington, or Auckland and other ports—3rd class, £16 to £21; 2nd class, £38 to £43; the address of the High Commissioner for New Zealand is 13 Victoria Street, London, S.W.

SOUTH AFRICA.

The following remarks upon the various Colonies of South Africa are based upon the latest obtainable information. It should, however, be remembered that conditions are constantly changing. Both in the great mining industries and in Agriculture the lack of unskilled labour is keenly felt, and this consideration should always be borne in mind by intending settlers.

The Emigrants' Information Office are ever active in procuring the latest information and issuing warnings, when such a course is necessary, to intending settlers, and its latest publications should always be consulted.

Generally speaking there is no particular inducement for professional men to emigrate to South

Africa, the supply of candidates for such posts as they require is almost always in excess of the demand, and the competition in the big centres of industry is very keen. On the other hand, there seem to be good openings for farmers and stock-keepers, but these should always acquire some local experience before setting up on their own account.

Cape Colony.—The climate is healthy, and well suited to the European constitution. The summer heat is greater and drier than in England. The interior of the Colony is liable to drought, but the south coast country has abundant intermittent rain. Some of the drier parts of the Colony, such as the Karoo, are very beneficial to persons suffering from chest complaints. The chief pastoral pursuit is the breeding of horses, cattle, ostriches, and sheep. Grants of available waste Crown lands, not exceeding 500 nor less than 8 acres in extent, and not being forest land, are made to approved applicants upon perpetual quit rent: for the conditions under which these grants are made see the South Africa Handbook of the Emigrants' Information Office, price 1d.

Unimproved Government land costs about 10s. an acre. A capital of £500, in addition to the cost of the land, is necessary. Dairy farming is profitably pursued, but is liable to the misfortunes occasioned by drought, which also influences the success or otherwise of sheep farming. Ostrich farming is very profitable, but requires special experience and skill.

Coloured labour is largely employed on the farms. Owing to the higher wages offered to the men on the railways and at the gold and diamond fields, farmers

find a difficulty in procuring hands, especially during the lambing, shearing, harvesting, and vintage seasons. A Kaffir's wages vary from 10s. to 20s. a month with food and a hut; wages have generally risen since the war. Settlers are urged to spend some time on a farm to learn Colonial ways before investing in land, and they will find some knowledge of the Cape Dutch language most useful.

Young men wishing to learn farming under Colonial farmers should apply to the Under-Secretary of Agriculture, Cape Town; their names will be forwarded to such farmers as are prepared to take them for a year for board and lodging. There is some opening for young men with experience of farming to commence upon what is known as the "halves" system, by which the owner of the land provides the necessary land, implements and stock, and receives a half-share of all sales of produce, etc.

There is not much opening for more architects, engineers, surveyors, or other professional men, unless they have posts to go to, or have sufficient money (say £200) to live on for a few months, while looking for employment.

Engineers will find that scarcely any machinery is made in the country, and that the engineering establishments are, as a rule, only repairing shops.

The supply of qualified teachers in Government Schools is, in some districts, short of the demand. Certificated teachers desirous of employment should apply in the Colony to the Superintendent-General of Education. For the Regulations as to admission

into the Police and Cape Mounted Riflemen, see the Professional Handbook of the Emigrants' Information Office, referred to at the beginning of this chapter.

Fares to Cape Town—2nd class, £22 10s. to £30 9s.; 3rd class, £9 9s. to £24 3s.

The address of the Agent-General for Cape Colony is 98 Victoria Street, London, S.W.

Natal.—The climate is healthy. On the coast it is sub-tropical; in the interior it is more temperate owing to the rise in the land. Farmers will do well to obtain local experience, and some knowledge of the country and its products, before investing money in land. A large area of Crown lands, in lots not exceeding 2,000 acres each, is open for sale on freehold. The purchaser must fence and enter upon beneficial occupation within six months of the date of sale.

The principal products of the Colony are sheep, cattle, sugar, tea, fruit, maize, wattle-bark, and coal. The manufactories are few. Tanneries, breweries, and canning works are established in different parts, but the largest and most numerous of the manufacturing establishments are the sugar mills.

The land may be divided roughly into three districts as follow:—

(1) The "coast" lands. Here conditions are favourable for vegetable and fruit growing, or dairy farming. Agricultural or dairying land can be bought from £3—£8 an acre; good fruit land, however, near Durban, costs £30—£40 an acre.

(2) The "midland" districts, hitherto only used for cattle farming and grazing. The price of land in this district varies from 20s. to £5 an acre, in accordance with its distance from a railway. For a small agricultural farm at least £150 capital is required, and for a stock farmer holding 2,000 to 3,000 acres, about £1,500 exclusive of price of land.

(3) The "upper" districts are chiefly devoted to sheep farming and cattle rearing, but the crops of wheat grown near Dundee, Weinen, etc., are the best in Natal. Wattle-bark for tanning is also extensively exported.

The usual farm is from 1,500 to 3,000 acres and combines stock and agriculture. Land 10 to 20 miles from a railway would cost 20s. to 30s. an acre, and the requisite stock from £1,000 to £1,200. The land is all open grass and requires no clearing.

Fares from England to Durban—3rd class, £12 12s. to £21; 2nd class, £22 10s. to £34 13s.

The address of the Agent-General for Natal is 26 Victoria Street, London, S.W.

Transvaal.—By the Settlers' Ordinance, 1902, the Lieutenant-Governor of the Transvaal may set apart portions of Crown land, or may acquire other land, and divide all such land into holdings. The Commissioner of Lands may offer any such holdings for sale or lease, specifying their situation and the price or rent. Applications for such holdings must then be made in writing on the prescribed form to the Commissioner of Lands at Pretoria, and a deposit of 1 per cent. on the price must be made. No

application will be entertained unless the applicant is (1) at least 18 years of age, (2) has a competent knowledge of farming, (3) intends to occupy *bond-fide* the land applied for, (4) is of good character, and (5) holds the land exclusively for his own use and benefit. No applicant may obtain more than one holding. Before allotment he may be required to appear before the Land Board.

Holdings are allotted under licence or lease. The purchase money payable under licence is to be paid by sixty half-yearly instalments, but any number of instalments may be paid in advance. At the end of the licence, or at any time not being less than ten years, if all conditions have been fulfilled, and the whole of the purchase money and all other moneys due have been paid, the licensee obtains a Crown grant of the land. Leases are for five years—renewable for two years more—at a rent not exceeding 5 per cent. of the price of the holding; a lessee may on conditions become a licensee of his holding. All rights to minerals and mineral products are reserved to the Crown—unless otherwise specially provided.

The licensee or lessee must within six months of allotment reside on his holding during the whole term of his licence or lease for not less than eight months a year, and must cultivate it properly. Within two years he must erect a suitable residence, and must, as a rule, fence his holding. He must also destroy noxious animals and weeds, must plant a prescribed number of trees, and must occupy the land exclusively for his own use and benefit. The condition of residence may now by Ordinance 57 of 1903 be suspended.

Permits are required by those who wish to proceed to the Transvaal. They are given immediately to applicants on their making personal application to the Permit Secretary, Transvaal and Orange River Colony Permit Office at the port at which such persons propose to land. The person making the application must show that he is the possessor of £20, or that he has secured *bonâ-fide* employment in the Transvaal or Orange River Colony.

The Commissioner may to a limited extent purchase and supply to the settler farming requisites, such as wagons, &c., stock, and materials for permanent improvements, or may advance money to the settler to enable him to purchase these himself; all such advances, whether in kind or money, are to be repaid with interest.

Engineers, Architects, and other professional men should not emigrate to the Transvaal without a definite prospect of work. The struggle for life at Johannesburg and at the mines is as keen as anywhere in the world.

In Johannesburg the cost of living is from two to three times as much as it is in England: the rent of a small house containing four or five rooms is £8 to £15 a month, and the rate for board and lodging in most boarding houses is £8 to £11 10s. a month, and in better-class houses £12 to £18.

There are openings in the Transvaal for the right sort of men as farmers and agriculturists, and markets are good. But there are also grave drawbacks to be contended with; such as lack of water in many places,

liability to hail storms, to early and late frosts, to attacks of locusts, and the prevalence and virulence of certain insect and fungoid diseases. It is essential that a man should have some farming experience in South Africa, or should accept employment for a year or two with an experienced farmer in the Colony before sinking his capital on a farm of his own. Cereal farming itself is not often profitable: it should be combined with stock-keeping and transport riding. The average mixed farms should not be less than 1,000 acres, but most farms are much larger. Farm labourers are almost all natives; they are paid as high as £2 or £3 a month with board and lodging. It is important that a settler should have substantial capital, and one of £4,000 to £6,000 is necessary for an experienced farmer to establish himself on the High Veldt.

Fares from Cape Town to Johannesburg—2nd class, £6 11s.; from Durban, £3 10s. 1d.

The address of the Agent-General for the Transvaal is 72 Victoria Street, London, S.W.

Orange River Colony. By the Lands Settlement Ordinances, 1902 and 1903, "The Land Settlement Board of the Orange River Colony" may dispose of Crown lands by sale or lease to any applicant. Application must be made in writing to the Secretary of the Board at Bloemfontein specifying the particular portion of Crown land desired; and applicants may be required to appear before the Board in person. Those obtaining land either by lease or purchase must reside on and cultivate their land. Leases are for five years, renewable for five or ten years more, and

the rent is five per cent. of the purchase price. Purchasers pay by instalments spread over thirty years or may pay up after five years' occupation the whole of the purchase money then owing. As soon as the whole is paid up, and any advances have been repaid, the land becomes the property of the purchaser, who receives a grant thereof on perpetual quit rent. These terms may by the Ordinance of 1903 be varied. The Government may advance money to any such lessee or purchaser for the purpose of his affecting permanent improvements on the land. All rights to gold, silver, and precious stones are reserved to the Crown, and any other minerals may also be reserved.

Private land used for agriculture costs about 30s. to 75s. per morgen (two acres), for dairying 10s. to 50s., for stock-keeping 10s. to 35s., and unimproved land 5s. to 7s. 6d. 1,200 to 1,400 acres of agricultural land or 3,000 to 4,000 acres of good grazing land are required. On an agricultural farm of the above size three or four spans of trek oxen are necessary; a span consists of 14 oxen, which would cost £10 a-piece. On stock farms two spans would be enough. The average price of horses is £25, of cows £14, oxen £11, and ewes 25s. A start could be made with 20 to 40 breeding cattle. A new waggon costs £80 to £120, and a double-furrow plough £9 to £15.

A knowledge of the vernacular Dutch and of Kaffir is almost essential. The Orange Colony Handbook of the Emigrants' Information Office gives a list of suitable books for the study of these two languages.

Fare from Cape Town to Bloemfontien—2nd class, £5 6s. 8d.

The cost of living at Bloemfontein is very high: a small house costs £12 to £16 per month, and board and lodging costs £7 10s. to £8 10s. per month.

For regulations as to permits, see the section on the Transvaal.

Southern Rhodesia.—Southern Rhodesia is divided into two provinces—Mashonaland, chief town Salisbury, which is the seat of Government; and Matabeleland, chief town Bulawayo. There are about 4,000 Europeans and 376,000 natives in Mashonaland, and 7,000 Europeans and 187,000 natives in Matabeleland.

The railways from Gwelo to Selukwe and from Bulawayo southwards to the Gwanda district have lately been opened. The railway from Bulawayo to the Zambesi has reached the Wankie coal district.

Naturally a country of such large extent (143,800 square miles) has a variety of climates, yet as most of it is a considerable height above the sea and within the tropics, there are no extremes of heat and cold. There are two seasons, the wet and the dry; the rains begin about the end of October and continue with intermissions till the end of April; from the beginning of May till the end of September there is practically no rain; the best time to arrive is during the dry season. The rainfall is greater in Mashonaland than in Matabeleland. As in so many new countries, malarial fever is prevalent at certain seasons, the worst time being at the end of the rains; attacks of the illness generally follow the breaking up of new ground.

The learned professions are all well represented in Southern Rhodesia, but as the population increases there are likely to be further openings. There is a good demand for qualified land surveyors. The British South Africa Police are under the control of the Imperial Government, and offer a healthy and attractive career; for regulations as to admission, etc., see the "Professional Handbook of the Emigrants' Information Society."

Gold mining is the principal industry of the country, and on the success of this its immediate future depends. The output in 1902 was 194,170 ozs., 551,895 ozs. in 1906.

Land in Southern Rhodesia can be purchased from the British South Africa Company or hold under agreement, subject to occupation and other conditions, with option of purchase by instalments. At present the price of unimproved farms is from about 1s. to 5s. an acre.

Applications for land should be addressed to the Director of Land Settlement, Salisbury, Rhodesia; or to the Secretary, Land Settlement Department, 2 London Wall Buildings, London, E.C.

The average size of a farm in Mashonaland is 3,000 acres, and in Matabeleland 6,000 acres.

The greater part of the country is suitable for cattle, and the grass is generally good. Lung sickness, red-water, and other diseases are prevalent at times.

Parts, especially in Mashonaland, are well suited for agriculture. Indian corn, millet, tobacco, and potatoes can be grown without irrigation. Wheat and oats promise well where water can be led, and experiments have been successfully made in cotton growing. As farming is, in a great measure, in an experimental stage, no one is recommended to attempt it without a capital of say £1,000, and then only after acquiring by residence experience of the special conditions of the country.

The address of the British South Africa Company is 2 London Wall Buildings, London, E.C.

For select list of Schools consult Appendix IV.
Also see "Future Career Association."

Charles Thurnam & Sons, Printers Carlisle

APPENDICES

NOTE—The utmost care has been exercised in gathering together the information supplied in the following page. Nothing has been admitted which cannot command the entire confidence of parents.

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THE FUTURE CAREER ASSOCIATION.

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By authority of the Senatus, L. J. GRANT, *Secretary of Senatus*,

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2. *Evening Course*.
- II. THE FACULTY OF ARTS (*including* (1) *General Literature, Secondary Teacher's Training Course, Day Training College, and Oriental Studies*) (2) The Department of Architecture. Day and Evening Classes.
- III. THE FACULTY OF SCIENCE (a) Natural Science Division (Day and Evening Classes) (b) Medical Division (Preliminary and Intermediate Studies.) (c) Department of Bacteriology. (d) Department of Public Health.
- IV. THE FACULTY OF ENGINEERING: *including Mechanical, Electrical, and Civil Engineering.* Day and Evening Classes.
- V. THE FACULTY OF MEDICINE. Advanced Medical Studies at King's College Hospital.
- VI. THE WOMEN'S DEPARTMENT (at 13 Kensington Square).
- VII. KING'S COLLEGE SCHOOL (established at Wimbledon Common).
- VIII. THE CIVIL SERVICE DEPARTMENT.—1. Evening Classes for the Civil Service. 2. Day Classes for Female Appointments in G.P.O.
- IX. STRAND SCHOOL, suitable for Commerce and the Civil Service.

A separate Prospectus is prepared for each of these Faculties and Departments, and will be forwarded on application to the Secretary, King's College, Strand, W.C.

The Calendar of the College, price 2s. 6d. or 3s. by post, gives additional information, and may also be obtained from the Secretary.

UNIVERSITY OF DURHAM.

For particulars as to residence, expense, numerous Scholarships, degrees in Arts and Letters, or preparation for Ordination, write to the Master of University College, or the Principal of Hatfield Hall, or the Censor of unattached Students at Durham. For similar information as to the Course in Medicine or Science apply to the Secretary of the Durham College of Medicine, Newcastle on Tyne; or the Secretary of the Armstrong College of Science, Newcastle on Tyne.

UNIVERSITY OF DURHAM.

ARMSTRONG COLLEGE, NEWCASTLE-UPON-TYNE.

Principal : Sir ISAMBARD OWEN, D.C.L., M.D.

Particulars of curricula for University Degrees and College Diplomas in Engineering, Electrical Engineering, Naval Architecture, Mining, Metallurgy, Agriculture, Pure Science and Letters, as well as of Fellowships, Scholarships, and Exhibitions, and of facilities for residence on application to

F. H. PRUEN, Secretary,

ARMSTRONG COLLEGE, NEWCASTLE UPON-TYNE.

The University of Liverpool.

SESSION 1907-8.

Faculties of Arts, Science, Medicine, Law, and Engineering
University Training College for Teachers
School of Architecture
School of Commerce
Institute of Archaeology
School of Social Science and of Training for Social Work
Department of Public Health
School of Tropical Medicine
School of Veterinary Medicine and Surgery
School of Dental Surgery
School of Pharmacy
Institute of Comparative Pathology
Departments of Bio-Chemistry and Experimental Medicine
Halls of Residence for Men and Women
Evening Courses for the Degree of B.A.
Evening Lectures and Laboratory Instruction

• *Fellowships, Scholarships, Exhibitions, Special Grants and Prizes.*

Prospectuses and full particulars will be forwarded on application to

P. HEBBLETHWAITE, M.A.,
Registrar.

University College of Wales, Aberystwyth.

(One of the Constituent Colleges of the University of Wales.)

President—The Right Hon. Lord RENDEL.

Principal—THOMAS FRANCIS ROBERTS, M.A. (Oxon.), LL.D. (Vict.)

THE Courses of Instruction are arranged to meet the requirements for graduation in Arts, Law, or Science in the University of Wales, and will also be found serviceable to Students preparing for the Degree Examinations in these faculties of the University of London, for Examinations at Oxford and Cambridge, or for Medical Study at these or other Universities.

The Fee for either the Arts, Law, or Science Course is **£10**, a small extra charge being made for Laboratory Practice.

Entrance Scholarships, ranging in value from **£40** to **£10**, are awarded in September of each year.

The College possesses a well furnished Gymnasium, Recreation Grounds, Boats, &c.

MEN STUDENTS reside either in lodgings, which are obtainable at very moderate rates in the town, or at the Men Students' Hostel (Warden, Professor J. W. Marshall, M.A.)

For WOMEN STUDENTS a large and Commodious Hall of Residence is provided.

For General Prospectus, and also for Special Prospectuses of the Law, Normal and Agricultural Departments, the Training Department for Secondary Teachers, and all other particulars, apply to

J. H. DAVIES, M.A., Registrar.

UNIVERSITY COLLEGE

READING.

Principal - - - W. M. CHILDS, M.A.

THE COLLEGE provides complete courses of instruction for the Degree Examinations in Arts and Sciences of the University of London.

There are also complete courses of instruction in Agriculture, Horticulture, Dairying, Poultry Keeping, Fine Arts and Crafts, Music, and Commerce.

In connexion with the Department of Agriculture and Horticulture, opportunities for practical work are provided at the College Farm and Fruit Station, Shinfield Road, Reading, the College Gardens, the College Poultry Farm, Theale, near Reading, and the British Dairy Institute, Reading.

A new Hall of Residence for Men Students will be opened at the beginning of the Autumn Term, 1908. This Hall is the gift of Lady Wantage. It will provide accommodation for nearly 80 students.

An illustrated General Prospectus will be sent, post free, on application to the Registrar, University College, Reading.



THE AGRICULTURAL COLLEGE.

ASPATRIA, CUMBERLAND.

(VIA CARLISLE)

President SIR WILFRID LAWSON, B.A.

Principal J. SMITH HILL, B.A., B.Sc. (London).

(Prize-man of the Royal Agricultural Society, Associate and Gold Medallist of the Surveyors' Institution)

Assisted by a highly efficient staff of Lecturers and Instructors.

The College is situated in one of the Finest STOCK RAISING DISTRICTS of the North West of England, within easy distance of KESWICK and THE ENGLISH LAKES, and but three miles from the Solway Coast.

Ten Farms, Dairy and Workshops. Access to 2,000 acres of Highly Fanned Land. Sales of Live Stock and Produce held weekly at the Mart close to the College.

The COURSE is adapted for the SCIENTIFIC and PRACTICAL Instruction of future Farmers, Land Agents, and Owners, as well as for intending Colonists.

Practical Farm work is engaged in every day. Special training in ESTATE MANAGEMENT.

For Prospectus, Form of Entry, etc., application should be made to the Principal, The Agricultural College, Aspatria, Cumberland.

HARPER ADAMS
AGRICULTURAL COLLEGE,
NEWPORT, SALOP.

THIS Endowed College provides the following Courses of Instruction, suitable for those who intend farming at home or in the Colonies or who are desirous of becoming Land Agents:—

DIPLOMA COURSE.—Extending over two or three years, suitable for those preparing for the Higher Examinations in Agricultural Science. Students who have taken this Course have been successful in passing the National Diploma in Agriculture Surveyors' Institute Examination, &c.

CERTIFICATE COURSE.—Two years, designed for those who require practical training with a view of farming at home or going abroad to the Colonies.

SHORT COURSES are also provided at certain times of a practical nature in Farm Work and Dairying.

All Students take part in the Practical Work of the Farm, Dairy, and Workshops, which are equipped for giving a thoroughly practical training. The College Farm surrounds the buildings, and all Students are in residence.

For Prospectus apply to the Principal.

P. HEDWORTH FOULKES, B.Sc.

Terms commence October, January, and May.

THE GLASGOW AND WEST OF SCOTLAND
TECHNICAL COLLEGE.

The Diploma of the College is granted in the following Departments: Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining, Naval Architecture, Chemistry, Metallurgy, and Mathematics and Physics.

The Courses of Study for the Diploma usually extend over Three Sessions. The Average Fee per Session is £12 12s. Special Courses for individual Students are arranged as required. Holders of the Diploma are eligible for the Degree of B.Sc. in Engineering of the University of Glasgow after attendance for at least one Session upon prescribed University Classes.

In conjunction with the Glasgow School of Art, a Course for a Joint-Diploma in Architecture has been arranged.

New and well-equipped Laboratories have been provided in the Departments of Physics, Chemistry, Technical Chemistry, Metallurgy, Mechanics, Motive Power Engineering, Electrical Engineering, Biology and Bacteriology, and facilities for research are afforded.

The Preliminary Examination is held about the middle of September, and the Session commences in the week following.

The Calendar (price, by post, 1s. 6d.) and Prospectus (gratis) will be sent on application to

THE SECRETARY, THE TECHNICAL COLLEGE, GLASGOW.



H.M.S. 'CONWAY' SCHOOL SHIP

H.M.S. "CONWAY"

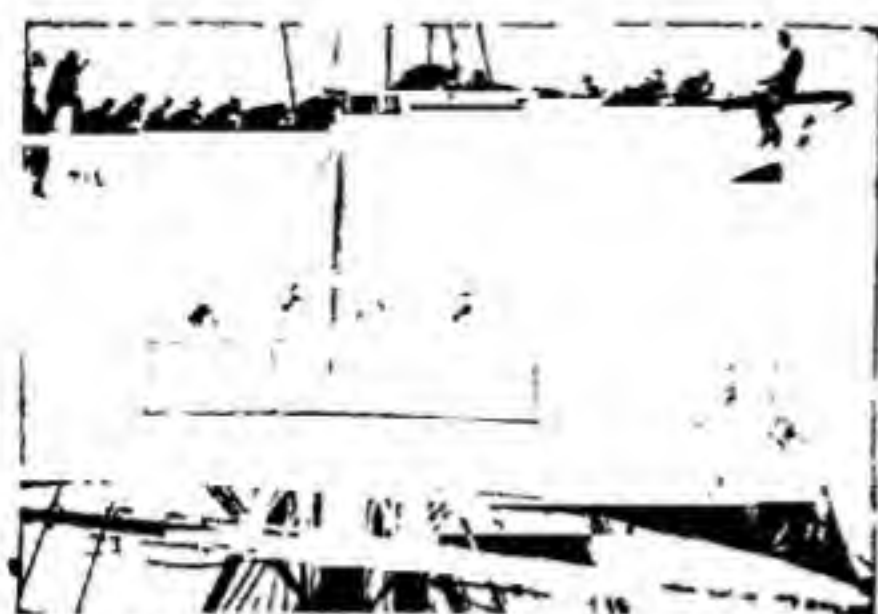
SCHOOL SHIP.

Moored in the Mersey.

Designed primarily to give a sound GENERAL and TECHNICAL EDUCATION to boys desirous of becoming Officers in the Mercantile Marine Service. Annual Nominations to R.N. College, Dartmouth. Special attention paid to boys entering for Naval Cadetships. Two years on the 'Conway' counts for apprenticeship as one year's sea service. Carpenter's and Engine Fitters' Shops, etc. Extensive playing fields on shore. Moderate terms.



MACHINE SHOP



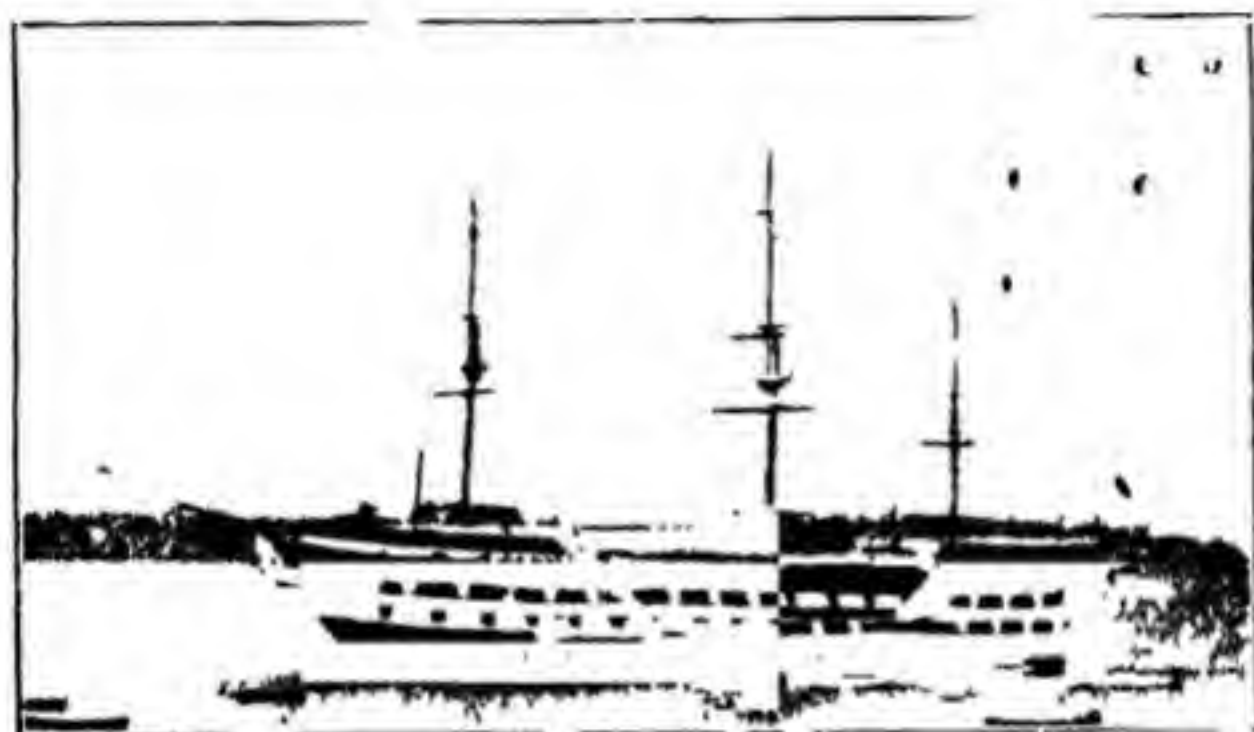
'KEEPING TORSAILS—'Haul out to Windward.'

For Prospectuses, apply to the Commander,

Lieut. H. W. BROADBENT,
R.N.R.,

H.M.S. 'Conway,' Rock Ferry, Cheshire.

THE Thames Nautical Training College.



H.M.S. "Worcester."

Established 1862. Incorporated 1893.

Chairman.

Sir THOMAS SUTHERLAND, G.C.M.G., LL.D.

Vice-Chairman.

Admiral the Hon. Sir EDMUND FREMANTLE, G.C.B., C.M.G.

Captain Superintendent—Commander D. WILSON BARKER,
R.N.R., F.R.S.E., F.R.G.S.

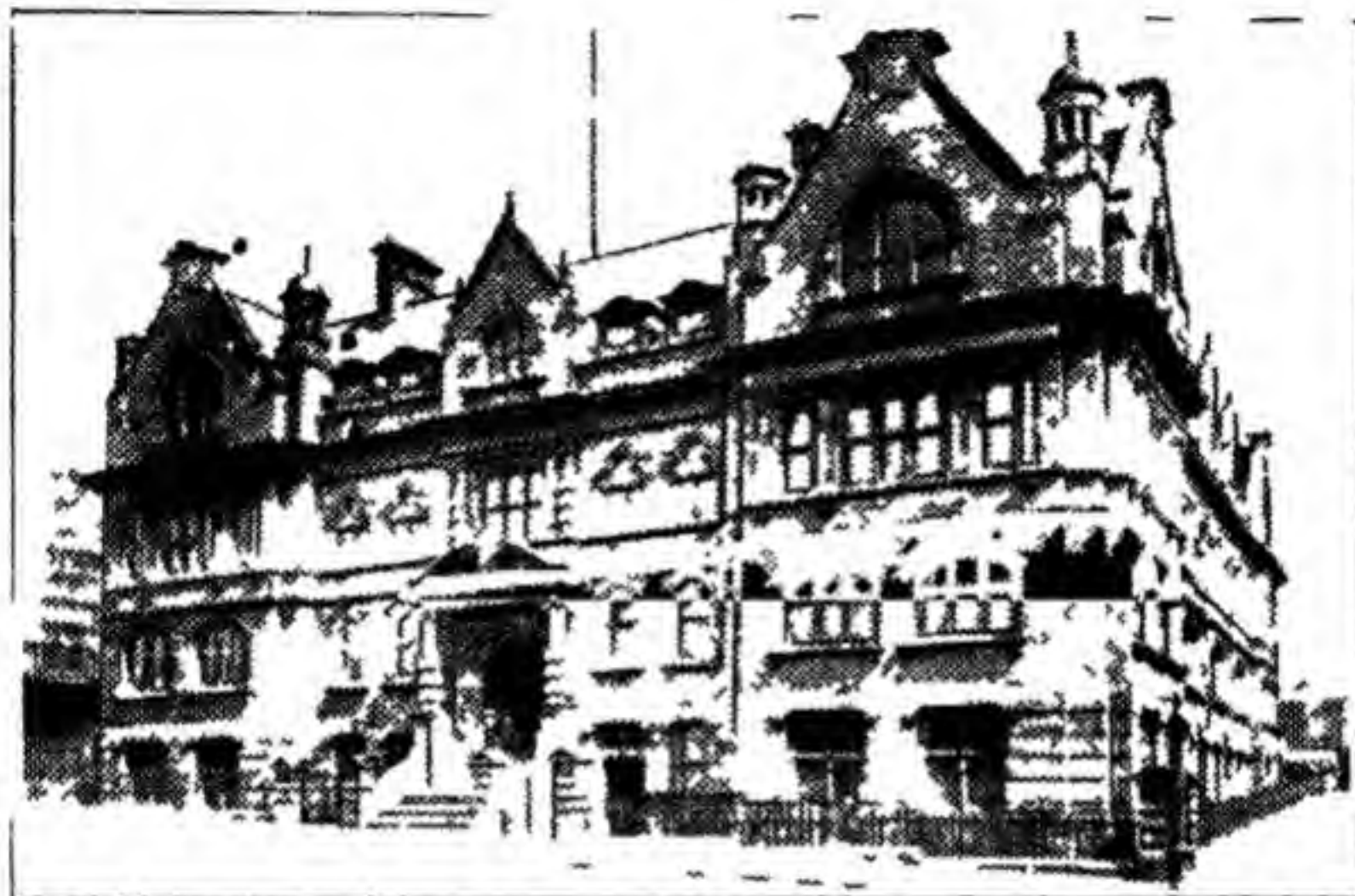
Head Master—F. S. ORME, M.A. (Emm. Coll., Camb.)

The Ship is anchored in the Thames, off Greenhithe, in one of the most healthy reaches of the River.

The College is devoted to the Training of Youths intending to become OFFICERS in the MERCANTILE MARINE. The Cadets are exercised in all the duties of a First Class Ship, they are taught Practical Seamanship, such as Knotting Splicing, Reefing and Furling Sails, &c., together with Navigation and Nautical Astronomy. In addition an Excellent System of GENERAL EDUCATION is carried out.

No Preliminary Examination other than the Medical is required. There are extensive Playing Fields ashore.

For further particulars and Illustrated Prospectus, apply to The Secretary, Thames Nautical Training College, 72 Mark Lane, London, E.C.; or Commander D. Wilson-Barker, R.N.R., "Worcester," off Greenhithe, Kent.



WIGAN AND DISTRICT MINING AND TECHNICAL COLLEGE, FOUNDED 1897

(The Oldest Mining College in Great Britain)

The Day Mining Department of the College has been approved by the Home Secretary for the purposes of the Coal Mines Regulation Act (1887) Amendment Act 1903.

Principal ALFRED HEWLETT F.R.S.E.
Professor THOMAS J. RANKIN C.E., F.S.M., M.I.M.E.

The DAY MINING DEPARTMENT furnishes a three years' course of the most efficient practical and theoretical training in Mining, comprising:—Practical Mathematics, Engineering Drawing, Chemistry of Mining, Metallurgy, Assaying, Electrical Physics, Electrical Engineering, Mining, Mine Surveying, Geology, Mechanical Engineering, Workshop Practice, and so on. The course is conducted on the Sandwich system of six months' continuous College instruction with an annual Summer Course of not less than four months in employment in a mining district, for which arrangements are made by the College Authorities. Each Summer Course of Inspection of a selected mining district is made under the direct supervision of the College Staff. This term lasts for two or three weeks and the expenses are borne by the student individually. In 1905 the Term will be to the Mines of Westphalia.

FOUNDED 1897. The Equipment comprises usual Lecture Theatres and Class Rooms for Science, Large Drawing Offices, special Laboratories for Mining, Geology, Metallurgy, Chemistry, Physics, Mechanical Engineering, Electrical Engineering, and Wood and Metal Workshop.

STAFF

Miner T. J. H. Head of Department, G. J. KNOW M.I.M.E.
Teacher—JOHN WELLS McCRUSTY M.I.M.E., THOMAS SMITH M.I.M.E.
Mechanical Engineer—JAMES DOBRIE A.I.C.E. (London).
Electrical Engineer—HARRISON WILL COGSWORTH A.M.I. Mech. E., A.M.I.E.E.
Chemical and Metallurgical—ERNEST BROOKS NAYLOR M.Sc. (Aust.) A.I.C.E. (U.S.)

FEE'S—Full Mining Course—50 guineas per annum. Final University Course—50 guineas. All fees payable by the pupil in full.

An Entrance Examination is held early in September each year. Exemption is given to holders of Oxford or Cambridge Senior Local Certificates or equivalent or higher Certificates.

For Prospectus, Entrance Examination Syllabus, and other particulars, write The Principal, Mining and Technical College, Wigan.

Bradley Court, Mitcheldean, Gloucester.

(LATE WELLINGORE HALL.)

Farm & Colonial & Engineering School.

Principal: W. HUNTER GANDY, Esq., Int. B.Sc.,
F.R.G.S., F.C.S.

The Curriculum comprises:—

- (1). A General School Education.
- (2). Specialised Training in both Theory and Practice for the Colonies, Home Farming, Engineering, Land Agency and Estate Management.
- (3). Manual and Out-door Work.

The guiding principal in the management of the School is to turn out gentlemen, full of "*esprit de corps*" (the School motto is "*non sibi sed toti*,") realising the dignity of labour, and fitted by knowledge and skill to earn a livelihood in their out door calling.

The School stands 600ft. above sea level, surrounded by its own grounds, affording ample opportunity for Farming, Forestry, and Games.

Special attention is given to delicate or backward boys.

Instructions in Riding and Driving, Farming, Surveying, Poultry-keeping, Carpentering, Smith's Work, Gardening, &c.

Illustrated Handbook, "All about Bradley Court," will be forwarded on application to the Principal.

How to commence a Career in Engineering.

It is a matter of considerable anxiety to parents to decide how their son should be deinde to become an Engineer shall commence his education for that profession the usual and the most seemingly obvious course adopted is for the son to be straightway apprenticed to some large engineering firm and a brief survey of the knowledge obtained during the first year or two of the young lad's apprenticeship is well worthy of consideration.

The two main points to be considered are—1. The scope of the work he has to do. 2. The individual attention which he ought to receive.

One only too often hears of lads filing and fitting some small detail of a machine over and over again week in week out an accomplishment which may be important in itself, but one that obviously cannot give the operator a very full education in engineering proper work of this kind (and there is no exception) is the case but too often, but what can one expect for a totally inexperienced youth if he goes to a large Works which is primarily not intended for a place of education.

As regards the second point, can one again expect a foreman in charge of a large number of men to do otherwise than give little or no individual attention to a young fellow who perhaps hardly knows the various uses of tools. A foreman is also in the first place an overseer, not an instructor, and is required to get the utmost work possible from the tools and machines under his control to do which he must always give preference to experienced hands.

The question whether it is advisable or not for a youth who has just left school to immediately associate with men of a totally different social standing is of course a matter for the parents' decision.

In view of the drawbacks described Mr. ARTHUR S. E. ROBINSON, AMICE, an engineer of many years standing and the late Head of a large Engineering Firm has managed to take a limited number of pupils at his country residence where due to extensive experimental work he has both well appointed workshops and drawing office.

Mr. Robinson undertakes to give a thorough grounding in workshop practice use of tools, lathes &c. drawing office work, and, which is most essential to give his pupils continual personal attention.

The domestic care of pupils is entirely in the hands of Mrs. Robinson.

TERMS—200 guineas per annum, including £100 premium payable quarterly in advance.

A simple form of Indenture has to be signed by the parent in each case, which when the time has been completed, will be endorsed to that effect and will certify that the pupil has served at least his first year in engineering work.

For Prospectus and full particulars apply to the White House, Busham, Beccles, Suffolk.

Crystal Palace School of Practical Engineering.

FOUNDED 1872.

Principal J. W. WILSON, M Inst C E M Inst Mech E,
President of the Society of Engineers 1892 & 1908

Vice Principal MAURICE WILSON, A M Inst C E,
President of the Society of Engineers 1909

Assisted by a Staff of Eight Lecturers and Instructors besides Lecturers
on additional and Special Subjects

This Technical School was established for the purpose of providing Students of Mechanical or Civil Engineering with thorough practical instruction in the rudiments of the profession and in the manipulation of materials. The institution has since been largely extended.

The object is to prepare Students by combined practical and theoretical instruction for the profession so that on entering an Engineer's office or works the pupil may at once be useful to his Principal and enabled to take advantage of the opportunities open to him having mastered the elementary details of the profession.

The School is also available for Students already trained who desire instruction in either the office or shops. It is open to men who wish to become Draughtsmen to Engineers or Patent Agents, to study Electric Mechanics, or to fit themselves by practical knowledge of scientific and mechanical work and expedients for life in the colonies or abroad.

The year is divided into three Terms of fifteen weeks each approximately.

Students can enter the School at any time. Each Term is complete in itself and absorbs the whole of a Student's time.

The usual age for admission to the School is 16 to 17 years, but there is no limit as to the age of Students.

MECHANICAL ENGINEERING (First Year).

This Course is comprised in one year of three Terms and is designed to convey instruction essential to the Student who either intends to be a Mechanical Engineer or to follow the Civil Engineering or any other branch of the profession.

The Students spend one Term each in the Drawing Office, the Pattern Shop, and Foundry, and the Fitting and Smith Shop besides attending Lectures on Steam and the Steam Engine. They always then Construction and Appliances, Materials and their Manufacture, etc.

CIVIL ENGINEERING (Second Year)

This Course is comprised in one year of three Terms and is supplementary to the Mechanical Course, but it can be attended separately, or a student can attend one or more of the Terms into which the year's Course is divided.

Special Lectures upon Civil Engineering subjects are given.

The first Term is devoted to Projecting and Executing Preparation by actual Fielding, Surveying, Theodolite work, etc. of Plans for a complete Public Work (as a Railway and Dock) and the Preparation of Plans, Estimates, etc. for Execution.

The second Term is devoted to the Execution of Working Plans and Sections, Calculations, Estimates, etc. of the said Work for the Contractors.

The third Term is utilised for Original Designing, the Preparation of Stress Diagrams, Specifications, etc. of Lattice Plate Girders and other Bridges, the investigation of and reporting upon Engineering Works completed or in progress, etc.

ELECTRICAL ENGINEERING.

This Course is of two Terms duration. The Student's time is devoted to Lectures, instruction, theoretical and practical, in the shops and offices of the School, and directed practical work on the Electrical Installation in the Crystal Palace and Grounds.

The School may be inspected during working hours on application to the Principal, who will be pleased to supply further information.

• **PREPARATION FOR HOLY ORDERS**

AT

St. Aidan's Theological College,

• • **BIRKENHEAD**

Principal

• **Rev. F. S. GUY WARMAN, M.A., B.D.**



1 **Post Graduate Course** — Three Terms

2 **Under-Graduate Course.** Combining residence and the special training of the College with the B.A. Course at Liverpool University, with which University the College is now affiliated.

Nine terms after the Liverpool Matriculation Examination has been passed.

Non Graduate Course.—Six terms after the Central Entrance Examination has been passed for which a Preparatory Class is held in the College.

The College is also affiliated to Durham University and Students who hold the College Certificate can proceed to the B.A. after three terms residence.

RIPON CLERGY COLLEGE.

Warden—The Lord Bishop of Ripon, D.D., D.C.L.

Principal—Rev. J. Battersby Harford, M.A.

Vice-Principal—Rev. H. D. A. Major, M.A.

Tutor—Rev. W. R. Coombs, M.A.

1. **OBJECT**—This College is designed to offer a thorough and systematic training for Holy Orders, at reduced expense, to *candidates*. Students are not restricted in their selection of the Diocese in which they desire to be ordained.

2. **RESIDENCE**—The buildings of the College provide accommodation for the Tutor, the Chaplain, and fifteen students. Further accommodation can be obtained in licensed lodgings in close proximity to the College.

3. **THE COLLEGE COURSE**—The *full* course of study extends over a period of two years, with three terms in each year. These terms begin in January, April and October, and amount in the aggregate to about 32 weeks. *Students are also received for a one year course.*

4. **COLLEGE EXPENSES**—The Expenses of residence in College, including tuition, board, and lodging, but not including books, stationery, and washing amount to £25 a term.

5. **EXHIBITIONS**—In some cases the expense is a serious difficulty. To meet this, as far as possible, the Governors offer exhibitions, varying in value from £10 to £35, tenable either (a) at the University, before commencing residence at Ripon, or (b) at Ripon itself or (c) at both.

6. **SPECIAL FEATURES**—Beside the ordinary course of lectures in Biblical and Theological subjects, special attention is given to training in Homiletic and Pastoral work. The Bishop himself conducts the sermon class. There is also systematic instruction in Voice Production, Public Reading and Speaking, and in the best methods of giving Religious Instruction in Schools.

For particulars apply to the Rev. the Principal, North Lodge, Ripon.

St. David's College,

LAMPETER.

THE College is incorporated by Royal Charter, and empowered to grant degrees of B.A. and B.D. Its students have special privileges in proceeding to Oxford and Cambridge.

The honours and pass courses include Theology, Classics, Mathematics, Science, and History. Scholarships in all these subjects, ranging from £50 to £5, are awarded annually in October. A sum of £100 is annually distributed among students going on to Oxford and Cambridge.

Its examinations are recognised as exempting for Legal, Engineering, and other professions; and its degrees are recognised by the Science and Art Department.

The College is residential, and the average inclusive expense need not exceed £50 a year.

The Memoranda, containing full particulars, will be forwarded gratis and post-free on application to the **MANAGER**, St. David's College, Lampeter.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

FOUNDED BY RAHERE, A.D. 1123.

The *in-patient* practice of this Hospital comprises a service of 11 Beds, of which 231 are allotted to the Medical Cases, 55 to the Surgical Cases, 25 to Diseases of the Eye, 32 to Diseases of Women, and 51 to Central and Isolation Cases, while 20 are for Convalescent Patients at Swanley. The Hospital receives within its walls over 7,000 Patients annually, whilst the Out Patients amount to more than 120,000.

PUPILS' APPOINTMENTS

Ten House Physicians and ten House Surgeons are appointed annually, and act for the first six months as juniors and for the second six months as seniors.

The Midwifery Assistant holds office for six months, and is appointed by the Physician Accoucheur. The Extra Midwifery Assistant is appointed every three months.

The Ophthalmic House Surgeon is appointed by the Ophthalmic Surgeons.

All the above Officers receive rooms and a salary of £80 a year, except the Junior House Physicians and Surgeons, who are paid at the rate of £75 per annum.

Two Resident Assistant Chloroformists are appointed annually, both are provided with rooms, the Senior receiving £125 a year, and the Junior £100 a year.

The Clinical Clerks and the Obstetric Clerks, the Clerks to the Out Patients, the Dressers to the In and Out Patients, and the Clerks and Dressers in the Special Departments, are chosen from the Students. No fee is paid for any of these appointments.

MEDICAL AND SURGICAL STAFF.

Consulting Physicians—Sir William Church, Bart., K.C.B., Dr. Hensley, Sir F. Underhill, Bart., F.R.S., Dr. Geo. St. Yves Duckworth.

Physicians—Dr. Norman Moore, Dr. West, Dr. Osmerod, Dr. Heringham, Dr. Booth, Dr. F. C. Hill, Dr. A. I. Garrod, Dr. Calvert, Dr. Morley Fletcher, Dr. Dyswile, Dr. Huxley.

Surgeons—Sir Thomas Smith, Bart., K.C.V.O., Mr. Willett, Mr. Latham, D.C.L., Mr. Marsh, Mr. Fenton.

Consulting Ophthalmic Surgeons—Mr. Fowler.

Senior Surgeons—Mr. Cripps, Mr. Bruce Clark, Mr. Fawcett, Mr. Lockwood, Mr. D. Arch. Fowler.

Assistant Surgeons—Dr. Watt, Mr. Leach, Mr. Lister, Mr. Lawton, Mr. Cask.

Physicians in Charge—Dr. Champneys.

Resident Physicians—Dr. Griffith.

Resident Surgeons—Mr. Jessop, Mr. Holmes, Squier.

Resident Surgeons—Mr. Fawcett, Mr. Ackland.

THE COLLEGE

Students attending the practice of the Hospital or the lectures in the Medical School are admitted to reside in the College within the Hospital walls, subject to the College regulations.

Resident Lecturers—Mr. C. I. Cask, F.P.S.

LECTURERS.

Medical—Dr. Moore, Dr. West.

Surgical—Mr. Bruce Clark, Mr. D. A. Fowler.

Diseases of the Eye and Special Injuries—Dr. Addison.

Clinical Lectures in Physical and Mental Medicine—Dr. F. C. Hill.

Clinical Lectures in Pathology—Dr. F. C. Hill.

Maternity—Mr. F. C. Hill, Mr. F. C. Hill, Mr. F. C. Hill.

Medical Lectures in the College—Dr. Cask.

Clinical Lectures in the College—Dr. Champneys.

Lectures in the College—Dr. Andrews.

Lectures in the College—Rev. Geo. Henslow.

Lectures in the College—Dr. Heringham.

Lectures in the College—Dr. F. W. Short.

OPEN SCHOLARSHIPS.

Four Scholarships and one Exhibition, worth £150, £100, £75, and £50 respectively, tenable for one year, will be competed for in September 1905.

Candidates for these Scholarships must be under twenty-five years of age, and must not have entered to the Medical and Surgical Practice of any London Medical School.

All communications to be addressed to the Dean of the Medical School, St. Bartholomew's Hospital, London, E.C. 1.

St. George's Hospital Medical School.

(University of London).

The **Hospital** and Medical School are situated at Hyde Park Corner, and are **readily accessible from all parts of London.**

By special arrangement with the **University of London** the Scientific part of the curriculum, comprising the first 2½ years, may be taken by St. George's Students either at University College or King's College, London.

St. George's students have therefore the advantage of the unrivalled teaching at these two Institutions for the Scientific Subjects.

The entire teaching in the School is devoted to the Subjects for the Final Examinations, that is to say, the essentially Medical Subjects.

The **Laboratories**, which were formerly devoted to Physiology, Anatomy, &c., are now available for the teaching and research in Bacteriology, Clinical Pathology, Pathological Chemistry, and other Modern Sciences connected with Medicine and Surgery.

The **Winter Session** commences on October 1st, but Students may enter at any time or for any particular course.

A register of accredited Apartments, and a List of Medical Men and others willing to receive St. George's men as boarders, may be seen on application to the Dean.

Two University Entrance Scholarships of the value of 70 guineas and £50 respectively are awarded at the commencement of each Winter Session.

Prizes The **William Brown Exhibition**, of the value of £100 per annum (for two years), is awarded by examination every second year.

The **William Brown Exhibition** of £10 (for three years) is awarded by examination every third year.

The **Allingham Scholarship**, of the value of £50, is awarded annually for the best Surgical Essay.

The **Brackenbury Prize in Medicine**, of the value of £30; The **Brackenbury Prize in Surgery**, of the value of £30; The **Webb Prize in Bacteriology**, of the value of £30; and many other Prizes are awarded annually.

Students are permitted to enter the Wards of the Hospital at any hour.

Dresserships, Clinical Clerkships & all House Offices are open without fee.

The following **Appointments**, amongst others, are open to Students after they have held House Office:

Medical Registrarship at	£200 per annum
Surgical Registrarship at	£200 " "
Curatorship of the Museum at	£200 " "
Assistant Curatorship at	£100 " "
Obstetric Assistantship, Resident, at	£100 " "
The Post of Senior Anaesthetist at	£50 " "
The Posts (2) of Junior Anaesthetists, each at	£30 " "
The Post of Resident Anaesthetist, at	£50 " "

Great attention is paid by Members of the Staff to individual teaching.

Special Courses are given in which the Requirements of University Examinations receive careful attention.

The School possesses an Amalgamation Club, with Reading and Luncheon Room, on the Hospital Premises. Students have the advantage of a Library of Medical and Scientific Books, which is kept up-to-date.

Treasurer - H. S. PENDLEBURY, F.R.C.S. *Dean* - E. I. SPRIGGS, M.D.

GUY'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).

The Hospital contains 608 Beds, an additional 50 beds having been opened on the Medical side of the Hospital.

ENTRANCE SCHOLARSHIPS.

Yearly in September.

Two OPEN SCHOLARSHIPS in Arts, one of the value of £100 open to Candidates under 20 years of age, and one of £50, open to Candidates under 25 years of age. Three OPEN SCHOLARSHIPS in Science, of the value of £150, £60, and £50, open to Candidates under 25 years of age.

PRIZES AND STUDENTSHIPS

Are awarded to Students in their various years, amounting in the aggregate to more than £300.

SPECIAL CLASSES.

In GENERAL PATHOLOGY and PHARMACOLOGY Special Courses of Instruction, adapted to the requirements of the Universities of Oxford, Cambridge, and London, are given twice a year.

Special Classes are also held for the University Examinations in Anatomy and Physiology, for the First and Final F.R.C.S., Eng., and other higher Examinations.

APPOINTMENTS.

All Hospital Appointments are made strictly in accordance with the merits of the Candidates, and without extra payment.

COLLEGE.

The Residential College accommodates about 50 Students, in addition to the Resident Staff of the Hospital. It contains a large Dining Hall, Reading Room, Library, and Gymnasium for the use of the STUDENTS' CLUB, these rooms being lighted by Electricity throughout.

DENTAL SCHOOL.

A recognised Dental School is attached to the Hospital, which affords to Students all the instruction required for a Licence in Dental Surgery.

Hospital Pupils in Dental Mechanics are received, and a systematic course of instruction carried out.

Two Open Entrance Scholarships in Practical Dental Mechanics, of the value of £20 each, are offered for competition annually in the months of April and September. All particulars relating to these examinations may be obtained upon application to the Dean.

Three Prizes of the aggregate value of £35 are awarded annually.

A Travelling Scholarship of the value of £100 will be offered in June, 1909.

The connection of this School with Guy's Hospital Medical School enables Candidates for the L.D.S. Eng., to obtain at one institution the entire curriculum required by the Examining Board, an advantage which cannot be obtained elsewhere in London.

Preparation Classes are held before each examination in both the Special and General subjects of the curriculum.

A Prospectus, containing full particulars as to Fees, Lectures, Course of Study advised, the Residential College, &c., may be obtained on application to the Dean, Dr. EASON, Guy's Hospital S.E.

University College Hospital Medical School.

(UNIVERSITY OF LONDON.)

ENTRANCE.

A Student may enter the School as soon as he has passed the University of London Matriculation Examination, or one of the other Preliminary Examinations that qualify a Medical Student for entering a Medical School. In this case he will pursue his Preliminary and Intermediate Studies at University College, and when those are completed will carry on his Final Medical Studies at University College Hospital Medical School. The student who, in addition to having passed a Matriculation or other examination, has completed his Preliminary and Intermediate Medical Studies at University College or elsewhere, may enter the University College Hospital Medical School for his Final Medical Studies only. Qualified Medical men and others who can produce evidence of sufficient qualifications may be admitted to Special Departments for the purposes of research, or to Hospital Practice for certain definite periods.

FEES.

The Preliminary Scientific Course at University College, 26 guineas.

Intermediate Course at University College, 57 guineas.

Final M.B. Course at University College Hospital Medical School, 80 guineas if paid in one sum, or 82 guineas paid in two instalments of 50 and 32 guineas.

University College Hospital has, through the munificence of the late Sir John Blundell Maple, Bart., been rebuilt and extended in accordance with the requirements of modern medical science. The new Hospital accommodates 200 patients, and possesses extensive out-patient and special departments.

Thirty-eight Clinical Appointments, eighteen of which are resident, are filled up by competition during the year, and these, as well as all Clerkships and Dresserships, are open to students of the Hospital without extra fee.

The New Medical School is now completed, and it provides accommodation for Lectures and Demonstrations and Practical Work in all the final subjects of the medical curriculum. There are three Lecture Demonstration Theatres for the teaching of Morbid Anatomy, Bacteriology, and Chemical Pathology, also rooms equipped for the teaching of Operative Surgery and Surgical Anatomy, and two large Lecture Theatres.

The Library contains about 8,000 volumes.

The Medical Society, which was founded in 1828 for promoting the Study of Medical and Surgical Sciences amongst students and for social intercourse, has four rooms set apart for Reading and Recreation, and there is a large Gymnasium with Baths attached in the School buildings, fully equipped and at the disposal of Members of the Society.

PROFESSORS AND LECTURERS AND CLINICAL TEACHERS.

Medicine	...	J. R. BRADFORD, M.D., F.R.C.P., D.Sc., F.R.S. SIR THOMAS BARLOW, Bart., K.C.V.O., M.D. J. R. BRADFORD, M.D., F.R.S. SIDNEY MARTIN, M.D., F.R.S.
Clinical Medicine	..	J. R. BRADFORD, M.D., F.R.S. SIDNEY MARTIN, M.D., F.R.S. J. RUSSELL RUSSELL, M.D., F.R.C.P. H. BATTY SHAW, M.D., F.R.C.P. F. J. POYNTON, M.D., F.R.C.P. C. BOLTON, M.D., B.Sc., M.R.C.P.
Surgery	..	A. E. BARKER, F.R.C.S. A. E. BARKER, F.R.C.S. R. J. GODLEE, M.B., M.S., F.R.C.S. BILTON POLLARD, B.S., F.R.C.S. RAYMOND JOHNSON, B.S., F.R.C.S. RUPERT BUCKNALL, M.S., F.R.C.S. WILFRED TROTTER, M.S., F.R.C.S.
Clinical Surgery	..	H. R. SPENCER, M.D., F.R.C.P. G. F. BLACKER, M.D., F.R.C.P., F.R.C.S. SIDNEY MARTIN, M.D., F.R.S.
Midwifery	..	F. J. POYNTON, M.D., F.R.C.P.
Pathology	..	H. BATTY SHAW, M.D., F.R.C.P.
Forensic Medicine	..	PERCY FLEMMING, B.S., F.R.C.S.
Therapeutics	..	J. HERBERT PARSONS, B.S., D.Sc., F.R.C.S.
Ophthalmic Medicine and Surgery	..	H. RADCLIFFE CROCKER, M.D., F.R.C.P.
Diseases of the Skin	..	HERBERT TILLEY, B.S., F.R.C.S.
Diseases of Ear, Nose, and Throat	..	SIDNEY SPOKES, M.R.C.S., L.D.S.
Dental Surgery	..	DUDLEY W. BUNTON, M.D.
Anæsthetics	..	

Scholarships and Exhibitions of the value of £400 are offered for competition annually.

The Athletic Ground is at Perivale within easy access of the Hospital.

Prospectus, with all information as to Classes, Scholarships, &c., may be obtained from the DEAN, University College Hospital Medical School (University Street).

SIDNEY MARTIN, M.D., F.R.S., Dean, Gower Street, W.C.
LEONARD R. THOMAS, Secretary.

UNIVERSITY OF DURHAM.

College of Medicine, Newcastle-upon-Tyne.

Degrees in Medicine, Surgery, and Hygiene, and Diploma in Public Health.—One Diploma and Six Degrees are conferred by the University of Durham—*viz.*, Diploma in Public Health and the Degrees of Bachelor in Medicine, Doctor in Medicine, Bachelor in Surgery and Master in Surgery, Bachelor in Hygiene and Doctor in Hygiene. These Degrees are open to men and women.

Students can complete at the University of Durham College of Medicine, Newcastle-upon-Tyne, the entire course of professional study required for the above Degrees and for the Diploma in Public Health; also for the examinations of the Royal Colleges of Physicians and Surgeons, and for the Army and Navy Examination Boards.

Students who have satisfied the requirements of the General Medical Council as regards Registration, in some Examination other than the Durham Matriculation, or its equivalent, may enter on a course of study for a degree in Medicine upon satisfying the Examiners of the University of Durham in any *three* of the subjects of the Matriculation Examination, provided that one of them at least is a language other than English.

Attendance at the University of Durham College of Medicine during one of the five years of professional study, or subsequently to qualification elsewhere, is required as part of the curriculum for the Degrees, except in the case of Practitioners of more than fifteen years' standing, who have attained the age of forty years, who can obtain the Degree of M.D. after examination only.

In the case of a Student in Medicine who studies only one year in the University, the Regulations regarding Matriculation must be complied with at least one year before the candidate presents himself for his final examination.

The First, Second, and Third Examinations for the Degree of M.B. may be passed prior to the commencement of attendance at Newcastle.

A Candidate who has passed the First and Second Examinations of the University will be exempt from the First and Second Examinations of the Conjoint Board in England, and will be entitled to present himself for the Final Examination of the Board on the completion of the necessary curriculum.

A Dental curriculum is provided.

All information, together with Examination Papers, etc., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, which may be obtained gratis from the Secretary at the College.

Scholarships, etc.—A University of Durham Scholarship, value £100, for proficiency in Arts, awarded annually to full Students in their first year only. The Pears' Scholarship, value £150, for proficiency in Arts. The Masopie Scholarship, value £17, for proficiency in Arts. The Dickinson Scholarship—value, the interest of £100 and a Gold Medal for Medicine, Surgery, Midwifery and Pathology. The Tulloch Scholarship—value, the interest of £100—for Anatomy, Physiology, and Chemistry. The Charlton Scholarship—value, the interest of £700—for Medicine. The Gibb Scholarship—value, the interest of £500—for Pathology. The Luke Armstrong Scholarship—value, the interest

on £680 -for Comparative Pathology. The Stephen Scott Scholarship - value, the interest on £1000—for promoting the study of Surgery and allied subjects. Heath Scholarship—the late George Yeoman Heath, M.D., M.B., D.C.L., F.R.C.S., President of the University of Durham College of Medicine, bequeathed the sum of £4,000 to found a Scholarship in Surgery, the interest to be awarded every second year. Gibson Prize—value, the interest of £225 for Midwifery and Diseases of Women and Children. The Turnbull Prize and Medal for Surface Anatomy. The Goyder Memorial Scholarship (at the Infirmary)—value, the interest on £325, for Clinical Medicine and Clinical Surgery. At the end of each Session Prizes of Books are awarded in each of the regular Classes. Assistant Demonstrators of Anatomy, Prosectors and Assistant Physiologists are elected yearly. Pathological Assistants, Assistants to the Dental Surgeon, Assistants in the Eye Department, Clinical Clerks and Dressers are appointed every three months.

The Royal Victoria Infirmary contains over 100 beds. Clinical Lectures are delivered by the Physicians and Surgeons in rotation. Pathological Demonstrations are given as opportunity offers by the Pathologist. Practical Midwifery can be studied at the Newcastle Lying in Hospital, where there is an Out-door Practice of about 1,000 cases annually.

FEES.

(a.) A Composition Ticket for Lectures at the College may be obtained :

- I. By payment of 72 guineas on entrance.
- II. By payment of 16 guineas at the commencement of the First year, and 56 guineas at the commencement of the Second Year.
- III. By three annual instalments of 36, 31 and 20 guineas respectively, at the commencement of the Sessional year.

(b.) Fees for attendance on Hospital Practice : -

For three months' Medical and Surgical Practice, 5 guineas.

" six "	"	"	"	8	"
" one year's "	"	"	"	12	"
" perpetual "	"	"	"	25	"

Or by three instalments at the commencement of the Sessional Year, viz. : - First year, 12 guineas ; Second year, 10 guineas ; Third year, 6 guineas. Or by two instalments, viz. : - First year, 14 guineas ; Second year, 12 guineas.

In addition to the above fees, the Committee of the Royal Victoria Infirmary require the payment of 2 guineas yearly up to three years from every Student attending the Infirmary for a year or part of a year. After three years of attendance, such payment will be no longer necessary.

(c.) Single Course of Lectures, 5 guineas.

(d.) A Composition Ticket for the Courses of Lectures and Practical work of the first two years of the curriculum may be obtained by the payment of 40 guineas on entrance.

Fees for Lectures, etc., at the College must be paid to the Secretary, and Fees for Hospital Practice to Dr. Thomas Beattie at the time of entry.

Further particulars may be obtained from the Secretary.

ROBERT HOWDEN, Professor of Anatomy at the College.

Glasgow Royal Infirmary.

THE SESSIONS open in April and October each year. Number of Beds including the Ophthalmic Department is 618.

Special Wards and Beds are set apart for the treatment of Diseases of Women of the Throat and Nose and of the Ear. Advice is given at the Dispensary on Diseases of the Skin and of the Teeth and there is a special department for the treatment of Diseases and Injuries of the Eye. There is a fully equipped Electrical Pavilion. Women Students are admitted to the Clinical Teaching and Practice of the Infirmary. Medical and Surgical Wards being set apart for their exclusive use.

Physicians—Dr. MIDDLETON, Dr. MONRO, Dr. HENDER, Dr. COWAN and Dr. ANDERSON.

Surgeons—Mr. BARTON, Mr. ADAMS, Mr. NEWMAN, Mr. Q. McLENNAN, Mr. PRINGLE, Mr. RUTHERFORD and Mr. PATTERSON.

Consultant—Dr. BALFOUR MARRISAT.

Diseases of the Ear—Dr. KERR LOVE.

Surgeon for Diseases of Throat and Nose—Dr. JOHN MACINLYR.

Consultant Physicians—Dr. McHURRIE, Dr. HENDERSON, Dr. C. S. MARSHALL, Dr. SCOTT, Dr. McLAUCHLAN and Dr. HARRINGTON.

First Assistant Physicians—Dr. JUNE, Dr. BROWN and Dr. MACPHAIL.

Assistant Surgeons—Mr. MURDOCH, Mr. PATRICK, Mr. MACKEN, Mr. FALLOUS, Mr. KAY and Mr. RAMSEY.

Third Assistant Surgeons—Mr. BATTERSEY, Mr. DUFF and Mr. MORI.

Special advice is given to Out Patients on—

Diseases of the Ear by Dr. KERR LOVE and Dr. ADAM.

Diseases of the Throat and Nose by Dr. FULTON.

Diseases of the Eye by Dr. ROWAN and Dr. THOMSON.

Diseases of the Skin by Dr. ALLEN MORRIS.

Diseases of Women by Dr. P. McBRIDE and vacant.

Diseases of the Teeth by Mr. WILLIAM TAYLOR.

Consulting Surgeon for Diseases of the Ear—Dr. A. MATHIAS RAMSAY.

Consulting Electrician—Dr. JOHN MACINLYR.

Medical Electrician—Dr. JAMES R. RIDDIE.

Assistant Medical Electricians—Dr. S. CAHILL, Dr. KATHERINE CHALMAN and Dr. McLAUCHLAN.

Electrician—Dr. H. H. BOWLAND.

Accident List—Dr. KING PATRICK.

House Appointments—Five House Physicians, Eight House Surgeons and an Assistant to the Gynaecologist are elected every six months.

Doctors, Clinical Clerks, and Assistants to the Pathologist are selected from the Students.

Fees—The David Foulis Scholarship and the John Ford Prize (value £25 each) are open to Students of the Royal Infirmary.

Fees, which include Hospital Practice and the Clinical Lectures—For one year £10.10s., six months £6.6s., three months £4.4s. The total fee is £1. Vaccination £1.1s. Pathology £4.4s. Bacteriology £2.2s. (Two thirds of the Hospital Fees and the full fees for Vaccination, Pathology and Bacteriology are paid by the Carnegie Trust for those Students who fulfil the conditions of the Trust).

OPHTHALMIC DEPARTMENT.

Surgeon—Dr. MATHIAS RAMSAY.

Assistant Surgeon—Dr. ROWAN.

Junior Assistant Surgeon—Dr. H. W. THOMSON.

Junior Assistant Surgeon and Electrician—Dr. GILCHRIST.

Pathologist—Dr. MARY HANNA.

Post-mortem—Dr. J. C. McCURR.

For further information apply to

J. MAXTONE THOM, M.B., Superintendent.

University College, Bristol.

FACULTY OF MEDICINE.

This College is the only Institution in the West of England which provides a Medical Curriculum. There is also a complete Dental Curriculum.

It is now arranged that Students of the College shall be admitted to the Clinical Practice of the Bristol Royal Infirmary and the Bristol General Hospital conjointly.

The Infirmary and the Hospital comprise between them a total of 470 beds, and both have very extensive Out-patient Departments, Special Departments for the Diseases of Women and Children, and of the Eye, Ear, and Throat, besides large Out-door Maternity Departments, and Dental Departments.

Students also have the privilege of attending the practice of the Bristol Royal Hospital for Sick Children and Women, containing 104 beds, and that of the Bristol Eye Hospital with 46 beds. The total number of beds available for Clinical Instruction is therefore 614.

Fever Hospital Practice is attended at the Hospitals for Infectious Diseases, of the Sanitary Authority of the Corporation of Bristol, and Lunatic Asylum Demonstrations at the City and County Lunatic Asylum, Fishponds.

Very exceptional facilities are thus afforded Students for obtaining a wide and thorough acquaintance with all branches of Medical and Surgical work. Each Student has the opportunity of personally studying a large number of cases and of acquiring practical skill in diagnosis and treatment.

Women are now admitted to all parts of the Medical Curriculum on the same terms as men.

DENTAL DEPARTMENT.—Professors and Lecturers.

PHYSICS—Lecturer, Professor A. P. Chattock, M. I. E. E.

CHEMISTRY—Lecturer, Professor F. Francis, D.Sc., Ph.D.

DENTAL ANATOMY & PHYSIOLOGY, DENTAL HISTOLOGY—Lecturer, E. A. G.

Dowling, M.R.C.S., L.R.C.P., L.D.S. Demonstrator, F. W. Pery, L.D.S.

PRACTICAL PHYSIOLOGY—Lecturer, Professor A. F. Stanley Kent, M.A., F.L.S., F.G.S.

DENTAL BACTERIOLOGY—Lecturer, Professor L. Walker-Hall, M.D. Demonstrator, Carey F. Coombs, M.D.

DENTAL METALLURGY, PRACTICAL DENTAL METALLURGY—Lecturer, J. W. McRae, M.A.

DENTAL SURGERY, PRACTICAL DENTAL SURGERY—Lecturer, W. R. Ackland, M.R.C.S., L.D.S.

DENTAL MECHANICS, PRACTICAL DENTAL MECHANICS—Lecturer, C. A. Hayman, M.D., F.R.C.S.I., L.R.C.P.I., L.D.S.

DENTAL MATERIA MEDICA—Lecturer, O. C. M. Davies, B.Sc., F.L.C.

ANATOMY, DESCRIPTIVE & PRACTICAL—Professor, E. Fawcett, M.D.

PHYSIOLOGY—Professor, A. F. Stanley Kent, M.A., F.L.S., F.G.S.

MEDICINE—Professors, F. H. Edgeworth, M.B., B.C., B.A., D.Sc., J. Michell Clarke, M.A., M.D., F.R.C.P.

SURGERY—Professors, J. Swain, M.D., M.S., F.R.C.S., C. A. Morton, F.R.C.S.

OPERATIVE DENTAL SURGERY.

The OPERATIVE DENTAL SURGERY is conducted in the Dental Department of the Bristol Royal Infirmary, under the charge of the Dental Surgeon, the Assistant Dental Surgeons, the Dental Assistants and the Dental Acæsthetists.

A Laboratory has been established in the College buildings, in which the details of mechanical dentistry can be learned, under the tuition of a skilled mechanic supervised by the Dean and the Dental Staff, and there is also a Laboratory for Dental Metallurgy.

The whole training necessary for the Dental Diploma may therefore now be undergone at the College.

FEES.—For the whole course, 140 guineas.

For Mechanical Dentistry, 75 guineas.

For the Curriculum subsequent to Mechanical Dentistry, 75 guineas.

Prospectuses and all particulars may be obtained on application to JAMES RAFTER, Registrar and Secretary, or to EDWARD FAWCETT, M.D., Dean.

The Royal Dental Hospital and London School of Dental Surgery, LEICESTER SQUARE, LONDON, W.C.

The Royal Dental Hospital was founded in 1858 at Soho Square and in March 1871 was removed to Leicester Square. The increased demands made on it by the public and the rapid growth of the Medical School necessitated the erection of an entirely new building. The new Hospital was opened in March 1901 and is complete in every detail with modern appliances and the school portion of the building thoroughly equipped for teaching purposes. The clinic of the Hospital is unrivalled. In 1900 99 760 operations were performed.

The following SCHOLARSHIPS and PRIZES are open for competition:

The ENTRANCE SCHOLARSHIP of the value of £20 awarded in October

The SACSTON SCHOLARSHIP of the value of £20

The STOUT PENNIE RESERVE SCHOLARSHIP of the value of £20

The ATTLED WOODHOUSE SCHOLARSHIP of the value of £

The KOLLET WOODHOUSE PRIZE of the value of £10

INSTRUCTION IN MECHANICAL DENTISTRY

The instruction in Mechanical Dentistry as required for the Dental Curriculum can be obtained at this Hospital.

Further particulars concerning Fees, Scholarships, etc. can be obtained on application to

THE DEAN

Edinburgh Dental Hospital and School, 31 CHAMBERS STREET, EDINBURGH.

The Edinburgh Dental Hospital provides for Dental Students a complete, efficient, and economical Education. The buildings are spacious and well equipped, the teaching staff is well qualified to teach all branches of Dentistry, and Students have every opportunity of gaining knowledge and skill.

The cost of the Curriculum and License is

Professional Education	£71 12 0
Diploma (1st and 2nd Professional Examinations)	15 15 0
	£90 7 0

The cost of the Hospital Kit of Instruments is £15 15s. 0d.

The Mechanical Training may be taken in the Hospital Laboratory. Fee for 5 years training, £63.

For Prospectus and further information apply to

WILLIAM GUY, F.R.C.S. (D.S.), DEAN.

DURHAM SCHOOL

(Refounded by King Henry VIII, 1541 A.D.).

Headmaster—Rev. R. D. BUDWORTH, M.A., Magdalen College, Oxford.

CLASSICAL and Modern Studies; Chemical and Physical Laboratories;
Swimming Bath; Gymnasium; Carpenter's Shop.

Eighteen King's Scholarships, varying in value from £50 to £16'16s. Six leaving Exhibitions of £10 a year, tenable at Oxford, Cambridge, or Durham Universities.

There are also other Scholarships and Exhibitions attached to the School at the Universities. A reduction in the Tuition Fees is made for sons of Clergymen, and there are also a limited number of nominations for Clergymen's sons, which considerably reduce the boarding fees.

Boarders are received by the Head Master, the Second Master, and R. H. J. Poole, Esq.

SEDBERGH SCHOOL.

A PUBLIC SCHOOL of the highest class, in an unusually beautiful and healthy position on the borders of Yorkshire and Westmoreland.

The excellent modern buildings include a Chapel, Hall, Gymnasium, Swimming Bath, and Sanatorium.

There is a staff of 20 masters.

Boys are prepared for Oxford and Cambridge, for the Matriculation Examination of the newer Universities, or for a Professional or Business Career.

* For details of Fees, Scholarships, &c., apply to the Headmaster,

SCHOOL HOUSE,

SEDBERGH, R.S.O.,

YORKSHIRE.

EASTBOURNE COLLEGE.

PRESIDENT.

HIS GRACE THE DUKE OF DEVONSHIRE, K.G., P.C.

HEAD-MASTER.

REV. F. S. WILLIAMS, M.A.

*(formerly Scholar of Jesus College, Cambridge, Ball University Scholar
and Assistant Master at Rugby School.)*

The School Fees are:--Tuition, £27 per annum; Boarding Fee, £60 per annum; Six Scholarships are offered annually, ranging in value from £60—£30 for Classics, Mathematics, Army subjects. There is an annual leaving Exhibition of £50, tenable for three years at a University or other place of higher education.

The buildings consist of the Chapel, Class room block, Science Laboratories, School House, and three other Boarding Houses, Gymnasium, Workshop, Racquet and Fives Courts. About £8,000 have recently been spent in building new class rooms, enlarging the school house, and in providing extra bath rooms and the latest and most approved sanitary fittings. A new big school-room is shortly to be built at a cost of £3,500.

The number of boys in the School is 180.

The School is approved by the Army Council for the granting of leaving Certificates for Army purposes, and by the joint Medical Board for instruction in Chemistry and Physics for the Medical course.

Physical Drill is compulsory for the whole school.

BROMSGROVE SCHOOL, WORCESTERSHIRE.

An Examination for four Entrance Scholarships, varying in value from £80 to £20, is held annually in June or July.

Two or more House Exhibitions of £20 are also offered, and at least one Exhibition for which a good singing voice and some knowledge of music are a necessary qualification.

Two or more Head Master's Nominations for vacancies at the reduced fee of £65 may be awarded on the result of the Examination.

Candidates must be under 15 years of age on the 20th of September of the year in which they are elected. Papers will be set in Latin, Greek, Mathematics, French, and General Knowledge.

Greek is not a compulsory subject, and a Scholarship may be won by good all-round work.

An allowance of marks is made for age.

Successful Candidates must enter the School at the beginning of the following Autumn term.

The tenure of the Scholarships is subject to the good conduct, industry, and progress of the scholars.

Arrangements will be made for Boarding Candidates during the examination; or Candidates may be examined under proper supervision at their own Schools, but no boy will be elected until he has had an interview with the Head Master.

F. J. R. HENDY, Head Master.

GIGGLESWICK SCHOOL, FOUNDED 1512

This ancient School provides in a district of singular beauty and under most healthy conditions a liberal Education for boys who intend to proceed to the Universities to compete for appointments in the Civil Service, to pass the Entrance Examination for Woolwich and Sandhurst, or to qualify for a Professional or Business career.

The buildings include a Chapel, Gymnasium, Physical and Chemical Laboratories, Sanatorium, Covered Swimming Bath and Fives Courts, Miniature Rifle Range, and Metal Workshops.

The School has been inspected by the Oxford and Cambridge Schools' Examination Board. It has been recognised by the Army Council and by the Joint Board of the Royal College of Physicians and Surgeons.

Junior School House for boys under fourteen.

Six Scholarships £60-20 are awarded annually.

For all particulars apply to the Headmaster, Giggleswick School, Settle, Yorks.

TRENT COLLEGE, DERBYSHIRE.

Headmaster—Rev. J. SAVILE TUCKER, M.A.

(Late Scholar of Balliol College, Oxford, and formerly
Assistant Master at Wellington College. Examining
Chaplain to the Lord Bishop of Liverpool.)

Chaplain and Ten Resident University Graduates.

Under the new scheme Trent College has been remodelled as a Church of England Public School of the first grade giving prominence to modern subjects, yet providing a high classical education to boys intended for a University career. Definite Religious Instruction. New Science Wing, with special facilities towards Medicine and Engineering. Thirty acres of playing fields. Remarkable health record.

Fee £75 per annum. Reductions for sons of clergy and officers in the Army and Navy.

For illustrated Prospectus, recent honours list, and entrance scholarships, apply to THE SECRETARY, Trent College, near Long Eaton, R.S.O.

KING'S SCHOOL, Canterbury

Headmaster—Rev. A. J. GALPIN, M.A.,

Late Scholar and Classical Lecturer at Trinity College, Oxford.

This claims to be the oldest Public School in England, dating back to the VIIIth century. It is entirely separate from the Cathedral Choir School. Number of boys about 240. Five Boarding Houses.

There are 50 King's Scholarships (£25 to £10 per annum), and several Entrance Scholarships (£40 to £10 per annum); also 10 Exhibitions (£50 per annum) to the Universities. The Scholarships are awarded every July and December, for Classics, Mathematics, and Modern Subjects.

Boys pass direct from the Army Class into Woolwich, Sandhurst, Indian Police, Indian Woods and Forests, &c.; from the Engineering Class into the Central Technical College, Kensington; and from the Navy Class into Naval Assistant Clerkships, &c., and into Osborne. No extra fees for these Classes.

Seven open Scholarships and Exhibitions were gained at Oxford and Cambridge in Dec., 1907, and Jan., 1908.

Tuition Fee :—£22 10s. per annum; Boarding Fee, £60 18s. per annum.

JUNIOR SCHOOL for Boys from 8 to 13. Tuition and Boarding, £63 10s. and £70 per annum. Preparation for the School Scholarships, etc.

THE KING'S SCHOOL, ROCHESTER.

FOUNDED 1542.

Governers—THE DEAN AND CHAPTER OF ROCHESTER CATHEDRAL.

Headmaster—REV. T. F. HOBSON, M.A., late Scholar of Christ Church Oxford.

Assistant Masters—A. DEWS, M.A., late Exhibitioner of Balliol College, Oxford; G. N. PARKINSON, B.A., late Scholar of Magdalene College Cambridge; A. B. FORSTER, M.A., Edinburgh University; H. C. PARTRIDGE, B.A., late Exhibitioner Jesus College, Oxford; G. R. DUKE.

CLASSICAL AND MODERN SIDES. Boys are prepared for the Universities, and for the Army, the various Government and Professional Examinations, and for Business life.

The School possesses large Playing Fields, and provision is made for Gymnastics, Swimming, Military Drill, Rifle Shooting, &c.

FEES: Board and Tuition, £60 per annum; Tuition only, £15 per annum.

SCHOLARSHIPS

- (a) —The Governors' Exhibition of £60 per annum awarded annually after the Summer Examination by the Oxford and Cambridge Joint School Examination Board, and tenable for 4 years at the Universities, &c.
- (b) The Gausley Exhibition of £15 per annum, awarded after the Summer Examination in alternate years, and tenable for 4 years at University College, Oxford.
- (c) King's Scholarships of £20 per annum, awarded annually in July to boys under 15, and tenable for 4 years in the School.
- (d) Headmasters' Exhibition of £16 per annum, awarded annually in July to boys under 15, tenable in the Schoolhouse.

ST LAWRENCE COLLEGE,

ST. LAWRENCE-ON-SEA, RAMSGATE.

(Formerly the South Eastern College)



UPPER SCHOOL

JUNIOR SCHOOL

A CHURCH OF ENGLAND PUBLIC SCHOOL.

Successes during the past two years:—

Six Open Scholarships and Exhibitions at Oxford and Cambridge (in Classics, Mathematics, and History)

Two entries into Sandhurst (out of five Candidates)

One entry into Woolwich (only Candidates sent in)

Fifth place in examination for India Police

Sixteen High certificates of the Oxford and Cambridge Joint Board

THE MODERN SIDE prepares boys for Science and Mathematical Scholarships at Oxford and Cambridge for the Medical Course for Engineering and Agricultural Colleges for the London University Matriculation Examination

There is a £100 Close Scholarship from the School to Oxford or Cambridge every year.

About 12 Scholarships to the School of value from £50 per annum are offered for competition in July each year open to boys in the School or from outside. *For particulars apply to the Headmaster.*

JUNIOR SCHOOL. A Junior School with its own buildings, staff, and grounds is attached to the College. Boys in the two Schools are kept entirely separate.

For further particulars apply to the Rev. E. C. SHERWOOD, Headmaster, stating whether an Upper School or Junior School prospectus is required.

CHRIST COLLEGE, Brecon.

FOUNDED BY KING HENRY VIII, 1511.

Headmaster—Rev. R. H. CHAMBERS, M.A.,

*Formerly Scholar of Corpus Christi College, Oxford, assisted by a strong
body of resident University Graduates.*

Church of England Public School, which, unfettered by recent legislation in Wales, prepares pupils from all parts of the United Kingdom for the ancient Universities, for the professions, and for business and private life. The buildings, besides beautiful and interesting 13th century Chapel, Dining Hall and Library, comprise great School, Class rooms, Boarding houses, covered and open Fives Courts, Laboratory, &c., of the most modern date and character. Cadet Corps, Gymnastics, Swimming, Carpentry flourish. The School, standing amid mountain air and scenery, in 30 acres of its own playing fields, has a remarkable record of good health and of successful work and games.

There are Classical and Modern sides, and special arrangements for junior boys.

Fees £54, reduced to £39 for a limited number of sons of Clergy and others. Scholarships and a Leaving Exhibition awarded annually.

Apply to the Headmaster.

PLYMOUTH COLLEGE, PLYMOUTH.

A PUBLIC SCHOOL with fine buildings, Laboratories, Bath, Gymnasium, etc.

Special instruction is given with very marked success for Naval Clerkships.

A large number of the present staff of Assistant Paymasters and Clerks, R.N., have been entirely prepared at Plymouth College.

Inclusive Fee, £66 per annum; for particulars apply to the Headmaster.

MONMOUTH GRAMMAR SCHOOL.

Founded by WILLIAM JONES in 1614.

Governors of the Estates :—The Worshipful Company of Haberdashers.

Income under the Endowment, £3,300. *

Tuition-Fees :— Classical Side, £10 a year ; Commercial Side, £6 a year.

Scholarships : 10 Foundation Scholarships, Free Tuition and £20 a year ;
20 Monmouth Scholarships, Free Tuition and £10 a year.

The Monmouth Scholarships are restricted to boys whose parents live in the borough of Monmouth.

FOUR LEAVING EXHIBITIONS are offered every year of not less than £30, and not more than £60.

The Valuable SCHOLARSHIPS AND EXHIBITIONS ON THE MEYRICK FOUNDATION at Jesus College, Oxford, are open to boys at Monmouth. There are 16 Scholarships of £80 a year, and 16 Exhibitions of £50 ; all tenable for 4 years.

There are Two BOARDING HOUSES. The fees in the Headmaster's House are £60 *inclusive*. The fees in Mr. Entwistle's House are £50 16 *inclusive*. (These include the fee for Tuition.)

The SCHOOL BUILDINGS include Large School Room, 10 Class Rooms, Science Lecture Room, Chemical and Physical Laboratories (completed in 1908) Art Room, and Library. Two Fives Courts, Playing Field of 7 acres ; Gymnasium, Bathing and Rowing on the Wye, Cadet Corps, Two Morris Tube Ranges in School grounds.

The School is in the centre of some of the most beautiful scenery in England, within easy reach of Tintern Abbey, Raglan, Chepstow, and Goodrich Castles, and the Forest of Dean.

In the last 16 years nearly 600 Oxford Local Certificates have been won (Senior or Junior). In 1899, 1901, and 1904, the 3rd, and in 1900, 1902, and 1903, the 1st place, among 2,000 and 3,000 candidates, was held by a Monmouth boy.

For information apply to the Head Master, LIONEL JAMES, M.A.

DOVER COLLEGE.

President—**H.R.H. THE PRINCE OF WALES, K.G.**

Chairman of Council—**LORD NORTHBOURNE.**

Headmaster—**Rev. W. G. COMPTON, M.A.**

The oldest School Buildings (Dover Priory, 1130 A.D.) possessed by any School in England, with four modern Boarding Houses (1870-1880), in which every boy, except in Junior School, has a separate room to sleep in—as in a hotel. Present numbers about 200.

Preparation for Universities, Army, and other Services. Cadet Corps (winners of Ashington Shield, 1906.) Physical Training. Science Laboratories. Approved by Army Council.

Fees—80 guineas, with numerous Scholarships, and Exhibitions for sons of Officers or Clergy.

RECENT SUCCESSES :—Oxford and Cambridge, 1907, Two Firsts (Classics and Theology). Two University Prizes, several Scholarships, and other Classes in Honours.

Army, 1907-8.—Woodwich, 8th for R.E., 11th and 13th, Entrance. Sandhurst and R.M.L.I., no failures.

BRIGHTON COLLEGE

WAS established as a Public School in the Year 1845, with the object of providing a thoroughly liberal and practical education in conformity with the principles of the Established Church.

The College has practically a unique position in one of the most popular Seaside Resorts of England. It stands in its own grounds, which have been beautifully laid out, of upwards of 10 acres, and is situated in the healthiest part of Brighton, within three minutes of the sea, and immediately under the Downs.

The buildings were erected from the designs of the late Sir George Gilbert Scott, R.A., and are in every way admirably suited to their purpose. The main buildings comprise School Chapel, Class Rooms, Science Rooms, Library, Gymnasium, and the Head Master's Boarding House. Additional Boarding Houses and Class Rooms for the Junior School were erected in the College Grounds in 1885, from the designs of an old Brightonian, T. G. Jackson, Esq., M.A., R.A. There are also a Snatorium, Carpenter's Workshop, Fives Courts, Morris Tube Rifle Range, etc. There are about 200 boys at present.

Boys are prepared for the Army, the Universities, the Professions, or for Business.

For Illustrated Prospectus, etc., apply to Rev. the Headmaster.

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A Public School for 200 Boarders.

Excellent Buildings and Playing Fields. Cubicle System.
New Chemical and Physical Laboratories. Valuable Scholarships.
Strong Engineering side. Special Preparation for Woolwich,
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Public School in England.

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First Grade Public School of 200 boys.

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FOUNDED 1525.

Situated in open country on a site of about 12 acres.

Accommodation for 150 Boys.

The buildings are modern, and include Chemical and Physical Laboratories, Science Lecture Room, Art Room, Workshop, Library, and Prefects' Room.

Two of the Assistant Masters are in residence, and accommodation is provided for about 30 boarders.

6 Scholarships, covering tuition fees, are available for boys already in the School.

LEAVING SCHOLARSHIPS TO OXFORD AND CAMBRIDGE UNIVERSITIES. —The James Allen Exhibition, value £100 per annum, and the Sleddall Exhibition, value £80 per annum, both tenable for 3 years. Boys may also compete for the valuable Argles, Hastings, Eaglesfield, and Wilson Exhibitions.

Headmaster—S. A. MOOR, M.A., Cambridge, late Principal of the Grasia College, Gondal, India, and recently Headmaster of Nantwich and Acton Grammar School

Leighton Park School, Reading.

A Public School of the Society of Friends.

Fees £105 per annum. Very healthy position. Thirty-five acres of Park land free to the boys. Splendid playing fields and a fine Swimming Bath.

Many successes at the Universities. Of boys who complete their school life at Leighton Park, 30 per cent. go to Oxford or Cambridge. There is one leaving Scholarship and two entrance Scholarships of £50 and £70 a year each, tenable during a boy's stay in the School.

* The School is divided into Classical and Modern Sides; on the latter, French and German are taught on the direct method and boys learn to speak those languages as well as write them.

* There are excellent Physics and Chemistry Laboratories as well as Workshops for Carpentry and Metal work, the latter furnished with three lathes.

For Illustrated Prospectus apply to JOHN RIDGES, Esq., M.A., Headmaster.



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Windermere Grammar School, Founded 1625.

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New Buildings 1887, School House 1895, New Wing containing Chemical Laboratory, Physical Laboratory and Art Room 1903, Gymnasium 1907

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Great attention is given to the physical well being of the boys, and diet, sanitation, and ventilation are alike excellent.

Recent successes include open Scholarships at Cambridge and Liverpool. There has not been a single failure in the Cambridge locals since 1901.

Fees for Board and Tuition,	40	guineas,	for boys under 12.
"	45	"	" over 12

Prospectus and other information on application to the Head-master.



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CARLISLE GRAMMAR SCHOOL.

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HEADMASTER :

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W. H. Brown, M.A., Oxon ; C. D. Wood, M.A., Oxon ; V. Elliott, B.A.,
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Walton, M.A., Oxon ; H. D. Harrison, University of London.

CARLISLE is an ancient First Grade School (over 170 boys), standing on the outskirts of the city. The buildings are new, and the equipment in the way of Laboratories for Practical Chemistry and Physics is of the latest type. Much attention is given to modern subjects, and boys can be prepared for an Engineering career, for Woolwich and Sandhurst, for Law, Medicine, the Civil Service, and for Commerce, as well as for the Universities. Oxford Local Centre.

Valuable Scholarships are tenable in the School, and from the School to Oxford and Cambridge.

Excellent Playing-fields, Gymnasium, Workshops, Fives courts, etc.

Carlisle is an exceptionally convenient Railway Centre.

Fees (board and tuition) £52 and £48 per annum according to age.

For Illustrated Prospectus, School Magazine, and all information address the Headmaster, who receives 25 boys only in his own house, and thus ensures that individual attention is given to every boy.

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**THE TRUE CRITERION OF SUCCESS IS THE PROPORTION,
 NOT MERELY NUMBERS, PASSED.**

There are Lawn Tennis Courts and a Cricket ground, also a ground for Football and every facility for Boating. Pupils can learn Riding if desired.

Parents are always informed when a pupil has no chance of passing the examination for which he is reading, and in such cases a pupil can be removed without notice.

WOOLWICH AND SANDHURST, 1904-5-6 and 7.

WOOLWICH, Eleven.

SANDHURST, Thirty-one, i.e., Forty-two out of Forty-four presented.

ARMY QUALIFYING, 1906-7, Twenty-six.

**MILITIA COMPETITIVE, 1904-5-6-7, Thirty-seven places taken :
 One First, Four Seconds.**

Detailed list giving the names of all the above can be obtained on application.

These results were obtained on an average of under Twenty-five pupils.

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Mr. T. H. Cockburn Mercer
Mr. H. C. B. Kirkpatrick
Mr. H. A. C. Gardner
Mr. E. H. J. Nicolls
Mr. W. H. G. Drake Packman
Mr. P. Conder
Mr. G. D. Melville
Mr. E. C. Mylne
Mr. E. G. Grant
Mr. U. A. F. Knox
Mr. H. F. Stokes
Mr. J. A. M. Lang
Mr. H. D. Stokes
Mr. R. W. Barker
Mr. R. E. Blandy
Mr. J. C. P. O'Brien
Mr. J. M. Tweedie
Mr. E. O. Quicke

Promotion.

Thirty Officers passed, without a single failure.

Woolwich.

* Mr. R. Firebrace (8th on whole list)
Mr. L. B. O'Brien
Mr. J. E. de Kantzow

Sandhurst.

Mr. G. J. Cruden
Mr. G. A. Lloyd
Mr. F. H. Young
Mr. H. H. Gilbert
Mr. R. H. Gallagher
Mr. A. L. Thomson
Mr. A. H. Bram

Army Qualifying.

Mr. K. S. Grove
Mr. G. Boulderson
* Mr. R. M. Scott
* Mr. N. J. Gill
Mr. M. T. Reilly
* Mr. A. Hordern
Mr. E. O. Queke
Mr. H. H. Gilbert
Mr. H. Gordon
Mr. R. Gallagher
Mr. E. C. Smith
* Mr. H. McCausland
Mr. G. A. Lloyd
Mr. E. M. Floyd

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Military College,

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The number of Pupils received is strictly limited and, as any vacancies are rapidly filled, early application is desirable.

Successes Obtained, 1904–1907.

1907	Thirty-three Successes were gained during 1907, including FIRST on the WHOLE LIST.	1907
1906	Every Pupil up for a Military Examination this year was successful (total 25), including SECOND INFANTRY and THIRD on the WHOLE LIST.	1906
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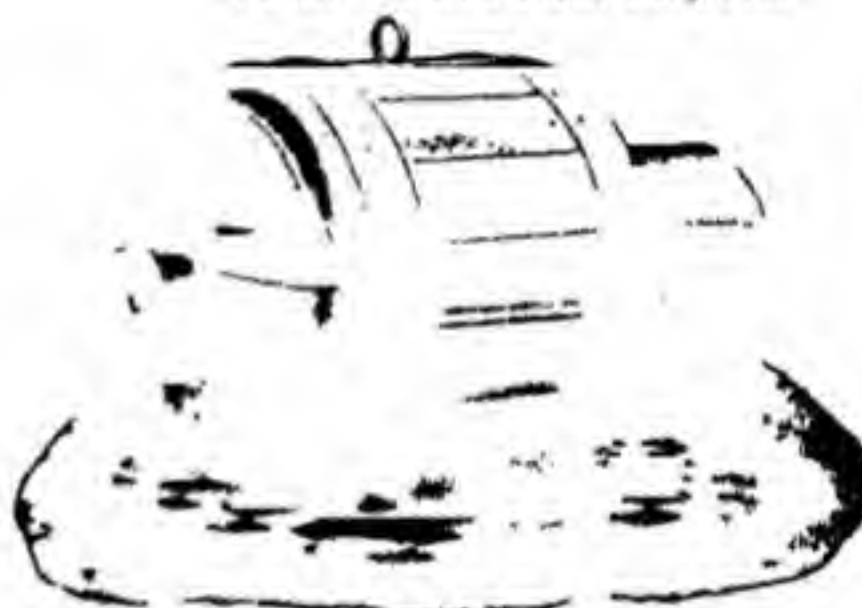
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